

## Editorial

In this 15th issue *Phelsuma* continues to expand, both increasing in the number of pages and the number of papers published, with plans underway for the publication of more than one volume per year. This year sees a strong emphasis on invertebrate taxonomy with many new species being described. This is largely a result of the collections made by the Indian Ocean Biodiversity Assessment 2000-2005. The publication of such fundamental biodiversity research in a journal available in the Western Indian Ocean is the primary purpose of *Phelsuma* and we are pleased that the value of the journal is recognised by researchers (indicated by the rapidly expanding number of submissions) and research institutes (with a similarly rapid increase in journal exchanges).

*Phelsuma* covers all of the Western Indian Ocean and this issue also includes research from Mauritius and from the Chagos islands. However, submissions remain biased towards Seychelles and papers published in *Phelsuma* represent a significant proportion of the research published on Seychelles. Comparing the numbers of biological publications relating to the different Western Indian Ocean islands it is clear that Madagascar dominates the region (62% of publications). The next most active research community is in Reunion (12%), followed by Seychelles (11%) and Mauritius (9%). Little research is published from the other islands. *Phelsuma* publishes 85% of the Seychelles research output, making it a significant contribution to the region's scientific activity. Further notable points emerge from analysis of publication records; for Seychelles the vast majority of papers are produced by overseas researchers (80% of papers), governmental agencies (Ministry of Environment, Seychelles Fishing Authority and Marine Parks Authority) and non-governmental organisations are both involved in 14% of publications. 12% of publications from Seychelles are authored by the Nature Protection Trust of Seychelles, highlighting the dominance of research output by a very small number of organisations. Similar patterns, particularly of overseas dominance, appear to exist for the other islands in the region, although Madagascar is increasingly involved both in participating and initiating research directly, a development that can only be welcomed.

J. Gerlach  
Editor

## Chairman's Report

There were two significant achievements for the NPTS conservation projects based on Silhouette this year. In December we were able to release five adult *Dispsochelys arnoldi* giant tortoises at Grande Barbe. These are the first tortoises to live in the wild on the island for many decades – probably more than a century! Their release is part of our project to return granitic island tortoises to their historical environment on a granitic island (all free ranging tortoises on the granitic islands such as Curieuse, Fregate and North are Aldabra tortoises). We have been gathering data on their dispersal from the release site, their dietary preferences and behaviour, so that longer term releases of their 131 offspring can be carefully planned.

The other project relating to Silhouette that has begun to contribute to our understanding of one of our most endangered species is to do with the sheath-tailed bats. The CCTV camera that is installed in the main roost is able to show the movement and number of bats in the roost. When this was correlated with synchronised recordings of the bat vocalisation we began to understand the composition of some of the groups. There remains a great deal of data to collect and analyse before we can fully understand the plight of these bats.

A second volume of the monographic series of studies resulting from the Indian Ocean Biodiversity Assessment is now available to the public, “Terrestrial and Freshwater Molluscs of the Seychelles Islands” by Justin Gerlach was published, as was the first monograph, by Backhuys Publishers of Leiden in the Netherlands. Further volumes are now at the publication stage and should be available later this year and in 2008. This series of monographs will cover much of the biodiversity of the islands and will provide easier access to records and identification of species. Previously those working in conservation and biological research often needed to undertake difficult literature searches to identify these species.

Once again we wish to thank the following donors and organisations for their support and encouragement:

Peter Kistler of SAN  
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### Volunteers

We wish to thank Global Vision International for their assistance with monitoring the Grande Barbe turtle nesting beach during the 2006/7 season. We would also like to

thank Steve Barnes for looking after our project in March and for his gifts of terrapin food. Help with alien vegetation management was provided by the Earthwatch group and Sussex University.

### **Scientific and other Visitors**

Dr. Russell Mittermeier and his family were on Silhouette in July to visit our various conservation projects.

In August, Earthwatch groups visited Silhouette as part of the Earthwatch/NPTS programme.

In September and again in March, the annual Sussex University field course was based on Silhouette – in the past the course was spread across three islands. Also in September, Greg Wepener, Unels Bristol and two Swiss students, all from North Island, visited the projects.

In November, Dr. Aaron Bauer and Eli Greenbaum spent 6 days on Silhouette as part of their research project on reptiles. Dr. Werner Holzinger and Brigitte Koneposh who were carrying out research on Fulgoroid bugs were here for a week.

Other visitors in November included Michael Betts and Edwin Palmer from Island Conservation Society, to assess the proposed trans-island road route in preparation for writing the Environmental Impact Assessment. The project coordinator for the U.S. Embassy in Mauritius, Margaret Hsiang, came to assess the result of funding for the forest rehabilitation project, which she found more than satisfactory. On the same day a team from the Ministry of Education were shown around the projects and Information Centre.

In March 2007 veterinarian Bertrand Fiol, a volunteer from last year, returned to Silhouette and helped with the tortoise project. There were also visits from the French Foreign Ministry (La Reunion) and the Marsh Unit of MENR.

Dr. Marie-Louise and Pierre Cariou visited from 21<sup>st</sup> to 26<sup>th</sup> April to continue research on *Drosophila* fruit flies. They were accompanied by Pat Matyot for the first three days. Research on water beetles was carried out by Prof. Günther Wewalka and on ground hoppers by Dr. Handrik Devriese in April 2007.

### **Overseas Visits and Meetings**

In 2006 the NPTS Scientific Co-ordinator was invited to the Conservation International's 2006 Global Symposium "Defying Nature's End – the African Context" held in Madagascar on 20-4<sup>th</sup> June 2006. This meeting was attended by CI members and partners from around the world for a discussion of the conservation needs of Africa, and opportunities. The recommendations of the symposium led to the "Madagascar

Declaration” outlining a strategy for African nations to achieve the United Nations Millennium Development Goals.

### **Seychelles Giant Tortoise Conservation Project**

The ultimate goal of this project is the re-establishment of the original Seychelles granitic island species of tortoise in their natural habitat on the granitic islands. The first major step towards this goal took place in December 2006 with the release of 5 adult *D. arnoldi* tortoises at Grande Barbe, Silhouette. They represent a breeding group that includes one very prolific female. Volunteers have been monitoring the movement, behaviour and dietary preferences of the tortoises. This data will then be built into the future plans for the release of juveniles when they attain a sufficient weight to prevent easy removal by humans.

The six *Dipsochelys hololissa* adults remain with the captive breeding project as they have produced only 15 hatchlings to date. In this group we have only two females, one of these has yet to produce viable eggs. There are now 146 juvenile tortoises in the project enclosures, ranging in weight from 100 grams to 14 kilos. We lost 4 juveniles in May when someone broke into one of the enclosures and removed four *D. arnoldi*. Every effort has been made to re-enforce security since the break-in.

Breeding success was much lower last season due to continual disturbance around the enclosures caused by the hotel construction company rubbish disposal tractors passing the enclosures just at the time when the females were preparing to dig.

### **Seychelles Terrapin Conservation Project**

Seven *Pelusios subniger* hatchlings were bred this season. For the first time in the 10 years of this project, the nest was a natural nest (in the past the *P. subniger* have always laid in the water!) and hatching occurred in the enclosures. As the terrapin eggs have often proved difficult to incubate artificially, leaving the nests in the enclosures may prove to be a better option. Two clutches of *P. castanoides* eggs were laid. These were incubated but proved to be infertile.

### **Silhouette Conservation Project**

In 2006 we suffered a major blow when our right hand man who was so important to the project was dismissed from the island. He was employed by IDC but seconded to NPTS as part of IDC support for NPTS. He has been replaced by a field-worker who helps with the tortoises but this means that the forest rehabilitation project can only be taken care of when we have free time. No new areas have been opened and no new planting has been done.

The hotel resort was opened in early 2007 but some off-site infrastructure is still under construction. Our concerns for the turtle nesting beach in front of the hotel were highlighted in December when hatchling turtles, confused by the hotel lighting, ended up wandering into the hotel grounds and into the freshwater lagoon. Although we have

rescued the majority of these hatchlings and let them enter the sea well away from the hotel, we believe that merely being confused and handled means the hatchlings will not behave normally in the sea and will be easy prey along the reef. During the season somewhere between 150 and 200 hatchlings were “rescued”.

### **Seychelles Sheath-Tailed Bat Project**

It has been an interesting year for this project with the installation of the CCTV camera. We have struggled with the technology of it all and had some very frustrating days when the technology had the upper hand. The most difficult aspect of this was to get the infra-red lamps working and focused in the right spot.

Combining the camera images with recordings of bat vocalisation has added to our understanding of their behaviour. The population in this roost remains at around 30 bats but has not gone above the 2003 record of 32.

Over the past two years we have tried to have fires banned in the vicinity of La Passe below the roost. From October to December, the entire hillside was often covered in smoke from the fire out on the jetty which was burning the hotel’s rubbish. The northwest wind carried it directly inland. This was stopped in late December when the hotel opened. The area has also suffered two major insecticide fogging episodes against which the Ministry of Environment reacted with vigour. The long term impact of the smoke and insecticide on invertebrate life could have serious repercussions for the bats, the insects they feed on and the insect pollinators of the forest plants.

The tourism development on Silhouette has brought great changes to the La Passe side of the island. Similar but less intrusive developments are planned for Grande Barbe which is a much more sensitive area with a very important hawksbill turtle nesting beach. It is thought that a road joining the two development areas is likely to be built. This road will change the essential character of the island which is the last of the large granitic islands that is in a natural state, and had only limited development potential. While NPTS accepts that a hotel at Grande Barbe is of benefit to tourism on Silhouette and in Seychelles, we regard the road as a major threat to the forest and biodiversity of the island.

### **Obituary**

Paul van Vlissingen, the well-known Dutch conservationist who financed the building of our Information Centre and laboratory on Silhouette through the Prince Bernard Nature Trust, passed away in August. His respect for the work of the NPTS remains an inspiration for us and we are grateful for his quiet support of our efforts to preserve the biodiversity of Silhouette.

Ron Gerlach  
Chairman

## 2005 Publications

[Ami = Amirantes; Ald = Aldabra; Sey = Seychelles]

- DISNEY, RHL The distinctive *Woodiphora parvula* Schmitz (Dpt. Phoridae) is a sibling species compexl. *Ent. Mo. Mag.* **141**; 143-150 [Sey]  
 A new species of *Megaselia* Rondani (Dipt., Phoridae) from Aldabra. *Ent. Mo. Mag.* **143**; 55-58 [Ald]

## 2006 Publications

- AHYONG, ST A new species of *Carinosquilla* (Crustacea, Stomatopoda) from the Seychelles with a cladistic analysis of the genus. *Zoosyst.* **282**; 307-314[Sey]  
 BAMBINI, L, BLYTH, A, BRADFORD, T, BRISTOL, R, BURTHE, S, CRAIG, L, DOWNS, N, LAING, S, MARSHALL-BALL, L, MCGOWAN, D, VEL, T & RACEY, P Another Seychelles endemic close to extinction: the emballonurid bat *Coleura seychellensis*. *Oryx* **40**(3); 310-318 [Sey]  
 BONIN, F, DEVAUX, B & DUPRE, A. *Turtles of the World*. A&C Black, London[Ald, Sey]  
 BRAILOVSKY, H & BARRERA, E Two new species of *Plinachtus* Stal (Hemiptera: Heteroptera: Coreidae: Coreinae: Gonocerini) from Aldabra Atoll and Madagascar. *Zootaxa* **1351**; 35-43 [Ald]  
 BROCHU, CA A new miniature horned crocodile from the Quaternary of Aldabra Atoll, western Indian Ocean. *Copeia* **2006**(2); 149-158 [Ald]  
 BROUWER, L, RICHARDSON, DS, EIKENAAR, C & KOMDEUR, J The role of group size and environmental factors on survival in a cooperatively breeding tropical passerine. *J. An. Ecol.* **75**(6); 1321-1329 [Sey]  
 DAGORN, L, HOLLAND, KN, HALLIER, JP, TAQUET, M, MORENO, G, SANCHO, G, ITANO, DG, AUMEERUDDY, R, GIRARD, C, MILLION, J & FONTENEAU, A Deep diving behavior observed in yellowfin tuna *Thunnus albacares*. *Aqu. Liv. Res.* **19**; 85-88[Sey]  
 DANIELS, SR, CUMBERLIDGE, N, PÉREZ-LOSADA, M, MARIJNISSEN, SAE & CRANDALL, KA Evolution of Afrotropical freshwater crab lineages obscured by morphological convergence. *Mol. Phyl. Evol.* **40**1; 227-235 [Sey]  
 DAYRAT, B A taxonomic revision of *Paradoris* sea slugs (Mollusca, Gastropoda, Nudibranchia, Doridina). *Zool. J. Linn. Soc.* **147**(2); 124-237 [Sey]  
 DEVAUX, B. La tortue geante des Seychelles, une survivante / Giant tortoise of Seychelles, a survivor. *Chelonii* **5**; 1-121 [Ald, Sey]  
 DISNEY, RHL Nine new species of *Megaselia* Rondani (Diptera: Phoridae) from the Seychelles. *Zootaxa* **1210**; 1-25 [Sey]  
 Two new sibling species of *Megaselia consueta* (Collin) (Dpt., Phoriadae) from Arabia and the Seychelles. *Ent. Mo. Mag.* **142**; 115-126 [Sey]  
 FOORD, SH & DIPPENAAR-SCHOEMAN, AS A revision of the Afrotropical species of *Hersilia* Audouin (Araneae: Hersiliidae). *Zootaxa* **1347**; 5-92 [Sey]  
 GAMAGE, DT, DE SILVA, MP, INOMATA, N, YAMAZAKI, T & SZMIDT, AE Comprehensive molecular phylogeny of the sub-family Dipterocarpoideae (Dipterocarpaceae) based on chloroplast DNA sequences. *Genes & Genet. Syst.* **81**; 1-12 [Sey]  
 GERLACH, J Cyclophoridae and Pomatiasidae (Mollusca: Prosobranchia) of the

- Seychelles Islands. *J. Conch.* **39**; 99-104 [Ald, Sey]
- GERLACH, J & TAYLOR, M Habitat use, roost characteristics and diet of the Seychelles sheath-tailed bat *Coleura seychellensis*. *Acta Chiropt.* **8**; 129-139 [Sey]
- GRAHAM, NAJ, WILSON, SK, JENNINGS, S, POLUNIN, NVC, BIJOUX, JP & ROBINSON, J Dynamic fragility of oceanic coral reef ecosystems. *Proc. Natn. Acad. Sci. USA* **103**(22); 8425-8429 [Ami, Ald, Sey]
- HAROU, AP, LAJOIE, RF, KNIVETON, DR & FROGLEY, MR The influence of the Indian Ocean dipole mode on precipitation over the Seychelles. *Int. Journ. Climatol.* **26**; 45-54 [Sey]
- KLAUS, S, SCHUBART, CD & BRANDIS, D Phylogeny, biogeography and a new taxonomy for the Gecarcinucoidea Rathbun, 1904 (Decapoda: Brachyura). *Org. Div. & Evol.* **6**; 199-217 [Sey]
- LEVY, O, ROSENFELD, M, YAM, R & SHEMAH, A Heterogeneity of coral skeletons isotopic compositions during the 1998 bleaching. *Limn & Oceanol* **512**; 1142-8 [Sey]
- LIEDE-SCHUMANN, S & MEVE, U *Calciophila*, a new genus in African Asclepiadeae, and taxonomic rectifications in *Cynanchum*. *Novon* **16**(3); 368-373 [Sey]
- LIBERTI, GL & CHERUY, F Tropospheric dryness and clouds over tropical Indian Ocean. *Atm. Res.* **82**(1-2); 276-293 [Sey]
- MADL, M Notes on Hymenoptera from Aride Island (Republic of Seychelles). *Linzer boil. Beitr.* **38**; 1499-1502 [Sey]  
Notes on Pentatomidae of the Seychelles (Hemiptera, Heteroptera). *Linzer boil. Beitr.* **38**; 1503-1505 [Sey]
- MARRIOTT, RJ & MAPSTONE, BD Geographic influences on and the accuracy and precision of age estimates for the red bass, *Lutjanus bohar* (Forsskal 1775): A large tropical reef fish. *Fish. Res.* **80**(2-3); 322-328 [Sey]
- OBURA, D Impacts of the 26 December 2004 tsunami in Eastern Africa. *Ocean & Coastal Manag.* **49**(11); 873-888 [Sey]
- PAYET, R Decision processes for large marine ecosystems management and policy. *Ocean Coast. Manag.* **49**(3-4); 110-132 [Sey]
- PAYET, R & AGRICOLE, W Climate change in the Seychelles: Implications for water and coral reefs. *Ambio* **35**; 182-189 [SEY]
- PILATO, G, BINDA, MG & LIST, O Three new species of eutardigrades from the Seychelles. *N.Z. Journ. Zool.* **33**; 39-48 [Sey]
- PFEIFFER, M & DULLO, WC Monsoon-induced cooling of the western equatorial Indian Ocean as recorded in coral oxygen isotope records from the Seychelles covering the period of 1840-1994 AD. *Q. Sci. Rev.* **259**(10); 993-1009 [Sey]
- PRICE, ARG, VINCENT, LPA, VENKATACHALAM, AJ, BOLTON, JJ & BASSON, PW Concordance between different measures of biodiversity in Indian Ocean Macroalgae. *Mar. Ecol. – Progress Series* **319**; 85-91 [Sey]
- RAMOS, JA, MAUL, AM, BOWLER, J, WOOD, L, THREADGOLD, R, JOHNSON, S, BIRCH, D & WALKER, S Annual variation in laying date and breeding success of Brown Noddies on Aride Island, Seychelles. *Emu* **106**; 81-86 [Sey]
- SEAWARD, MRD & APTROOT, A A preliminary checklist of lichens for the Seychelles group. *J. Hattori Bot. Lab.* **100**; 765-78 [Sey]

## Scolopendromorph centipedes from Seychelles with a review of previous records (Chilopoda: Scolopendromorpha)

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**Abstract:** Six species of scolopendromorph centipede are here recorded from Seychelles. The scolopendrids are *Scolopendra subspinipes subspinipes* Leach, *Otostigmus* (*O.*) *rugulosus* Porat and *Otostigmus* (*O.*) *orientalis* Porat, of which *Otostigmus seychellarum* Attems is shown to be a junior synonym. Records of *Scolopendra morsitans* L. and *Rhysida longipes longipes* are in error although it is possible that they could occur on the islands. Likewise the record of *Otostigmus* (*O.*) *astenus* appears to be incorrect. The cryptopids are *Cryptops* (*C.*) *doriae* Pocock, *C. (C.) decoratus* Lawrence and *C. (C.) cf. kempfi*. There is no evidence for the occurrence of *C. (C.) philammus*.

**Key words:** Seychelles, Chilopoda, Scolopendromorpha, Scolopendridae, Cryptopidae, *Scolopendra*, *Otostigmus*, *Cryptops*.

### INTRODUCTION

Previous publications on the centipedes of Seychelles are those of Brölemann (1895), Attems (1900) and Demange (1981). Gerlach (1997) provided a key to the myriapods. Recently collected material and specimens from the Natural History Museum, London are here described and specimens in the collection of the Musée Royale de l'Afrique Centrale, Tervuren, determined as *Cryptops philammus* Attems are reassessed. Unless otherwise stated, the specimens were collected by Dr Justin Gerlach.

The specimens were examined by reflected light but the *Cryptops* species were, in addition, cleared in ethylene glycol and examined by transmitted light. Single legs of *Cryptops* species were mounted in Canada Balsam or Hoyer's Mountant. For each species with the exception of *Cryptops* cf. *kempfi*, two voucher specimens (indicated by V) will be deposited at the Nature Protection Trust of Seychelles, Silhouette, Seychelles. The other specimens will be deposited in the Natural History Museum, London.



### Acronyms used

MRACT Musée Royale de l'Afrique Centrale, Tervuren.

BMNH The Natural History Museum, London.

### Key to recorded and potential Seychelles species

1. With four ocelli on each side of the head plate 2  
Head plate without ocelli 6
2. Spiracles elongated antero-posteriorly with a three-flapped valve. The head plate overlaps the first tergite 3  
Spiracles round or oval, without three-flapped valve. The head plate overlapped by the first tergite 4
3. Prefemora of ultimate legs generally with three rows of three spines on ventral surface (not currently recorded from Seychelles) *Scolopendra morsitans*  
Prefemora of ultimate legs one or two spines on ventral surface  
*Scolopendra subspinipes subspinipes*
4. With ten pairs of spiracles on segments 3, 5, 7, 8, 10, 12, 14, 16, 18 & 20 (not currently recorded from Seychelles) *Rhysida longipes longipes*  
With nine pairs of spiracles on segments 3, 5, 8, 10, 12, 14, 16, 18 & 20 5
5. With 17 antennomeres, ultimate leg coxopleuron with two end spines and one lateral spine and no dorsal spine *Otostigmus orientalis*  
With 19, 20 or 21 antennomeres coxopleuron with three or four end spines, one lateral and one dorsal spine *Otostigmus rugulosus*
6. Head plate with incomplete longitudinal sutures, tergite 1 with fine transverse anterior suture and incomplete paramedian sutures *Cryptops cf. kempfi*  
Head plate and tergite 1 without sutures 7
7. Ultimate leg femur with saw tooth *Cryptops doriae*  
Ultimate leg femur without saw tooth *Cryptops decoratus*

### Taxonomic part

#### *Scolopendra morsitans* LINNAEUS, 1758

*S. morsitans* Linnaeus, 1758: 638.

*S. morsitans*: Attems, 1930: 23, Figs. 38 & 39.

**Remarks:** A species widely distributed throughout tropical and warm regions, Schileyko (1995) gave 'Seychelles [Attems, 1930]' in his distribution of *S. morsitans* and this was repeated by Shelley et al. (2005). Attems (1930), however, did not list Seychelles in his distribution and there are no records of its occurrence on the Islands although it has been recorded from the Comoros, Madagascar, Mauritius, Rodrigues and Réunion. It could well occur on the islands but there is no evidence that it does so.

***Scolopendra subspinipes subspinipes* LEACH, 1815**

*S. subspinipes* Leach, 1815: 383.

*S. machaeropus* Attems, 1900: 136.

*S. subspinipes subspinipes*: Attems, 1930: 29.

Previous Seychelles records

*S. subspinipes*: Brölemann, 1895: 525. La Digue.

*S. machaeropus* Attems, 1900: 136. Mahé.

*S. machaeropus* ?*S. subspinipes*: Kraepelin, 1903 257, 259.

*S. subspinipes*: Demange, 1981: 627, 629. Mahé, Frégate.

*S. subspinipes*: Gerlach, 1997: 59. Mahé, Silhouette, Aride and Frégate.

Material examined

2 spms. ♀ 160mm, ♂ 102 mm, La Passe, Silhouette 31.x.2001 (V).

2 spms, juvenile, 37mm & 22mm (broken), Aride 2000.

1 spm, juvenile, 22mm, *Otostigmus* SEY U1999.3, La Passe, Silhouette, 19.i.1999.

1 spm, juvenile, 23mm, Aride -.vii.2000.

1 spm, juvenile, 29mm, North Island 29.vii.2000.

1 spm, juvenile, 23mm, Blue-headed centipede. Near Houses, Plateau, Aride Feb. 1999, J. Bowler (V).

1 spm juvenile, 20mm approx., X 41in rotten wood, Mon Plaisir, Silhouette 09.viii.2000.

Remarks: The specimens show the characters of *S. subspinipes subspinipes* as given in Attems (1930) with the exception of two specimens from Aride which lack a tarsal spur on leg 20.

Distribution: A few peripheral localities in Africa, Islands of the Indian Ocean (Seychelles, Madagascar, the Comoros, Rodrigues but not Mauritius), India, South East Asia, north to Japan, Oceania, the Caribbean, South America. Old records from Australia and New Zealand.

***Otostigmus (O.) rugulosus* PORAT, 1876**

(Figs. 1-4)

*O. rugulosus* Porat, 1876: 21.

*O. carinatus* Pocock, 1891: 412 (nec Porat 1876).

*O. (O.) rugulosus*: Attems, 1930: 144.

Previous Seychelles records

*Otostigmus rugulosus*: Brölemann, 1895: 527. La Digue and Mahé.

*O. rugulosus*: Gerlach, 1997: 59. Mahé, Silhouette.

Material examined

Spm 1, 28mm, La Passe, Silhouette 10.ix.1999 (V).

Spm 2, 24mm, end leg 7.7mm, Cousine 4.iv.2001 (V).

Spms 3-5, 21, 27 & 29mm in poor condition. Cousine, 15.iii. 1998, J. Kelly.

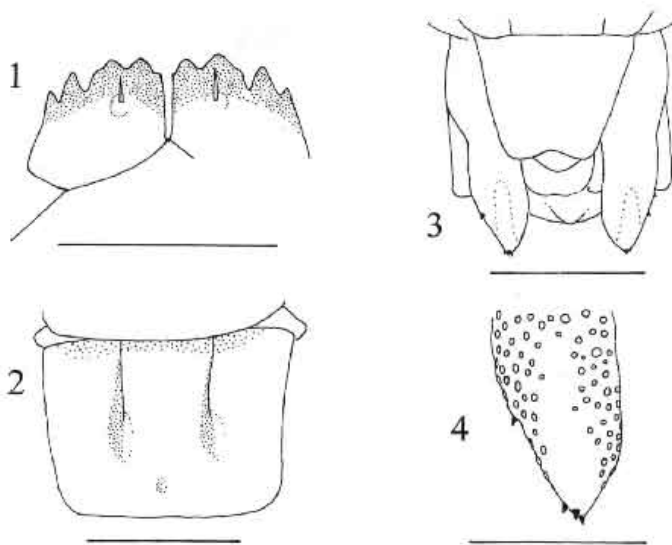
BMNH 1 spm 40mm 1952.12.17 239-240. Labelled *Otostigmus seychellarum* Attems. Silhouette. J. S. Gardiner.

Description of Seychelles material: Antennomeres (19) 21, basal 2 to 2.2 glabrous. Forcipular coxosternal teeth 4+4, the median two on each side somewhat longer and partially fused, the outer small and pointed (Fig. 1). Forcipular trochanteroprefemoral process with two very low teeth.

Tergite paramedian sutures complete on T5 or T6, marginate from 6, 8 or 9 with low median keel more or less developed. In specimen 2 only, a well-marked median keel from T6, the deep paramedian sulci and lateral corrugations form nine rounded ridges from T10 to T19. Tergites without spinules.

Sternite paramedian sutures occupying anterior 50% of sternite in mid trunk with weak posterior median depression on 6-19 and weak depressions at the end of the paramedian sutures on 7 to 18 in spm 1 (Fig. 2). Sternite 21 with sides converging posteriorly and hind border embayed (Fig. 3).

Coxopleural process of segment 21 with three apical spines (or two apical and one subapical) one (two) lateral spines (Fig. 4) and one dorsal spine very near the apex. The BMNH specimen has only two apical, one lateral and one dorsal spine. Ultimate leg prefemur with three rows of spines: four, rarely three ventrolaterals, three ventromedials, two dorsomedials and a corner spine.



**Figs. 1-4.** *Otostigmus rugulosus*. 1). Forcipular coxosternal toothplates spm 2 Cousine. 2). Sternite 21 spm 1 Silhouette. 3). Terminal segments, ventral view spm 1 (pores not shown). 4). Detail of right coxopleural process spm 1. Scale line =1mm, except Fig. 4 = 0.5mm

Legs with two tarsal spurs from 1 or 2 to 13, 14, or 15. One tarsal spur to 18 and sometimes 19. Legs 20 and 21 lack tarsal spurs.

Remarks: Attems (1930) stated that the mid and posterior tergites of *O. rugulosus* were spined “wenigstens die mittleren und hinteren ... dornstrichelig”. However, Porat (1876) made no mention of spines in his original description and the Seychelles specimens have no tergite spinules nor did eight specimens from Mauritius and Rodrigues (Lewis, 2002). This is a character subject to geographical variation.

Distribution: India, Nepal, Mauritius, Rodrigues, Seychelles, Andamans, Myanmar, Thailand, Indonesia (Sumatra)

***Otostigmus (O.) orientalis* PORAT, 1876**  
(Figs. 5-10)

*O. orientalis* Porat, 1876: 19.

*O. splendens* Pocock, 1890: 245.

*O. morsitans* Pocock, 1890: 246.

*O. seychellarum* Attems, 1900: 136 **syn. nov.**

*O. seychellarum* [not a synonym of *O. insularis* Haase, 1887 as proposed by Kraepelin, 1903:112].

*O. (O.) orientalis:* Attems, 1930:139.

Previous records

*Otostigmus orientalis:* Brölemann, 1895: 527. Marianne.

*Otostigma orientale* Pocock (sic !): Attems, 1900: 136. Mahé.

*Otostigma seychellarum* Attems, 1900: 136. Mahé.

*O. orientalis:* Demange, 1981: 626-628. Mahé, Silhouette.

*O. orientalis:* Gerlach, 1997: 59. Mahé, Silhouette.

*O. seychellarum:* Gerlach, 1997: 59. Silhouette.

Material examined

Spm 1, U1992:36, 23 mm, ultimate leg 11.4 mm (V) and spm 2, U1992:35, 29 mm, ultimate leg 12.5 mm (V). Oxford University Silhouette Expedition 1990, *Pisonia sechellarum* forest, vii-ix.1990. Colour brown.

Spm 3, 35 mm, ultimate leg 11.5 mm. Gratte Fesse, Silhouette, *Pandanus hornei*, 13.vii.2000. Colour olive, legs white.

Spm 4, 14 mm. Jardin Marron, Silhouette, -.iii. 2001.

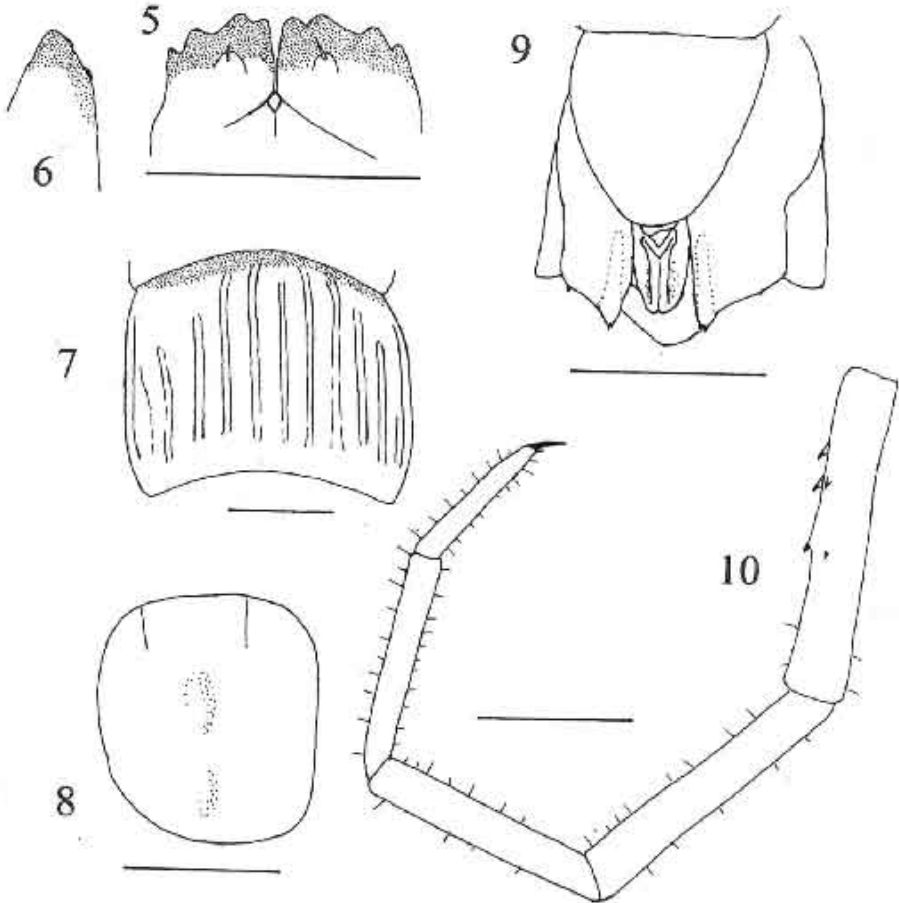
BMNH spms 1-6, 20, 26, 30, 28, 36, and 39 mm, 1952.12.17.239-240 labelled *Otostigmus seychellarum* Attems, Seychelles, Silhouette, J. S. Gardiner (all lack ultimate legs).

BMNH spm 7, 14 mm 1952.12.17.238 labelled *Otostigmus seychellarum* Attems, Seychelles Mahé, Forêt Noire Diot, J. S. Gardiner.

Description of Seychelles material: Antennomeres 17, basal 2.1-2.5 glabrous, atypically 3 virtually glabrous (with a few scattered setae) in spm 1. Forcipular coxosternal teeth 4+4,  
12

the median two on each side partially fused (Fig. 5). Forcipular trochanteroprefemoral process with two low teeth (Fig. 6).

Tergite paramedian sutures complete from 5, 6, 7 or 9, marginate from 3, 5, 6, 7, 8, 12 or 13, with (Fig. 7) or without keels or spinules. Sternites with very short anterior paramedian sutures, anterior 10-25% in mid body region, most with a median and some with two lateral depressions and, or, a median posterior depression at least in the mid body region (Fig. 8). The depressions are very shallow and not always apparent. Sternite 21 trapezoidal, as long as wide or wider than long, 1.3 wider than long in spm 3. Hind border straight or rounded (Fig. 9).



**Figs. 5-10.** *Otostigmus orientalis*. 5). Forcipular coxosternal toothplates spm 1 Silhouette. 6). Forcipular trochanteroprefemoral process spm 1 Silhouette. 7). Tergite 13 BMNH spm 1 (spinules not shown). 8). Sternite 11 spm 3 Gratte Fesse. 9). Terminal segments, ventral view spm 1 BMNH (pores not shown). 10). Ultimate leg spm 2 Silhouette. Scale line =1mm, except figs 5&6 = 0.5mm.

Coxopleural processes of ultimate legs short with two terminal spines and one lateral spine (Fig. 9), no dorsal spines. Ultimate leg prefemur with two or three ventrolateral, two or three ventromedials, that is, only two spine rows (Fig. 10). No corner spine.

With or without a tarsal spur on leg 1, one tarsal on 2 to 20, atypically to 19. Leg 21 (ultimate) without spurs.

Variation: Spms 1 and 3. Tergite paramedian sutures complete on 6 or 7, marginate from 12 or 13, without keels or spines. Spm 2 tergite paramedian sutures not apparent, marginate from T5. With seven keels or ridges from T5, the outer two weakly developed on 5 and 6, nine on T7 to T18. The keels and margins with small spinules/tubercles. Three low ridges on anterior half of T20.

BMNH spms 1-3 and 5 and 6 have seven keels from 5, 6 or 7 and nine from 9 or 10. Tergite 20 without or with three or five keels, tergite 21 without. The keels with fine spinules except in spm 2, which lacks them. With, or without scattered small tubercles between the keels. The nature of the spinules and tubercles unclear. Spm 4 has a median ridge from 4-19 but no lateral keels/ridges and is without spinules. Spm 10 is an early adolescens stadium. It has tergites with narrow keels but without spinules and tarsal spurs are not developed.

#### Remarks:

Attems (1930) described the last sternite of *O. orientalis* as one and a half times as long as wide, strongly attenuated posteriorly, the posterior border straight or rounded. In the Seychelles specimens the last sternite is only as long as wide or less. However, Attems gave the size of *O. orientalis* as up to 70 mm whereas the largest Seychelles specimen measures 39mm. The difference in shape is probably size related. Although Porat (1876) gave the antennomere number as 17 to 19 and this was repeated by Attems (1930), Kraepelin (1903), who re-examined the type material, gave 17 only. The antennomere number is likewise 17 in *O. splendens* Pocock, 1890 and *O. morsitans*, both junior synonyms of *O. orientalis*.

Kraepelin (1903), who did not re-examine the type material, synonymised *O. seychellarum* under *O. insularis*. Subsequently Chao & Chang (2003) synonymised *O. insularis* under *O. scaber* but did not list *O. seychellarum* in their synonymy. It is obvious that Attems' *O. seychellarum* is clearly not *O. scaber*, but apart from the keeled tergites it shares all other characters with *O. orientalis* which was first described as having somewhat wrinkled and atuberculate tergites ("Scuta dorsalis ... lateribus subrugulosus, granulis nullis.") However, Lewis (1996) synonymised *O. morsitans* Pocock, 1890, which has wart-like spines present on the most posterior tergites, under *O. orientalis*.

Specimen having seven to nine sharply ridged and finely toothed or spinulose tergite keels here regarded as *O. orientalis*, run down to couplets 18 and 19 in Attems (1930) key. That is to *O. insularis* Haase, 1887, *O. malayanus* Chamberlin, 1914, *O. scaber* Porat, 1876 and *O. amballae* Chamberlin, 1913 but correspond to none of these species. They match Attems (1900) description of *O. seychellarum* from Mahé which

comprised four specimens all lacking ultimate legs, namely, 17 antennomeres, four or five coxosternal teeth, with nine keels from T7 and coxopleural process with one or two end spines, one lateral, no dorsal spine.

The Seychelles population thus comprises individuals both with and without tergite keels whereas current evidence suggests that all Indian specimens have tergites without keels.

*O. seychellarum* is a junior synonym of *O. orientalis*

Distribution: India, Seychelles, Indonesia (Flores and Halmahere)

***Otostigmus (O.) astenus* KOHLRAUSCH, 1878**

*Branchiotrema astenus* Kohlrausch, 1878: 22.

*Branchiotrema calcitrans* Kohlrausch, 1878: 23.

*Branchiotrema luzonicum* Kohlrausch, 1878: 23.

*Otostigmus orientalis* Porat, 1876:19 [not a senior synonym of *Branchiotrema astenus* Kohlrausch 1881 (= *O. astenus*), as proposed by Haase, 1887:73].

*O. astenus*: Kraepelin, 1903: 114.

*O. (O.) astenus*: Attems, 1930: 143.

Remarks: Kraepelin (1903) and Attems (1930) listed the Seychelles in the distribution of *O. astenus*. However, I can find no published record for this. Haase (1887) and Brölemann, (1895) gave *Branchiotrema astenon* and also *B. calcitrans* and *B. luzonicum* (both synonyms of *O. astenus*) as synonyms of *O. orientalis* and this may well have led to the confusion. Currently there is no evidence of *O. astenus* occurring on the Seychelles. It is widely distributed in South East Asia, Australia and the islands of the Pacific. A record from Madagascar (an introduction) should be checked.

***Rhysida longipes longipes* (NEWPORT, 1845)**

*Branchiostoma longipes* Newport, 1845: 41.

*R. l. longipes*: Attems, 1930: 194, Fig. 244.

Remarks: Attems (1930) listed the Seychelles in the distribution of *R. l. longipes*, a species widely distributed in the tropics. However, I can find no published record for this. Kraepelin (1903) mentions specimens from Mahé, (Malabarküste). Presumably Attems took this to be Mahé in the Seychelles but it is, in fact, Mahé, Kerala State, India. There is no evidence for *Rhysida l. longipes* occurring in the Seychelles, even though it is widespread in the Indian Ocean on Madagascar, Mauritius, the Maldives, Eagle Island (Chagos Archipelago) and the Andaman and Nicobar Islands.

***Cryptops (C.) doriae* POCKOCK, 1891**

(Figs. 11-16)

*Cryptops doriae* Pocock, 1891: 421.

*C. (C.) doriae*: Attems, 1930: 214.

*C. (C.) doriae*: Lewis, 1999:20, figs 10-13, 14-35 & 51-53.



### Material examined

4 spms 13.5 (V), 14 (V) and 7 mm, U1998.34. Le Niol, Mahé about 250m asl, Cinnamon litter 3.viii.91. (A further four specimens lacking terminal legs not examined in detail).

4 spms 12, 12, 9 and 11 mm, U1999.3. Chemin Montagne Possee, Silhouette, 10.i.99.  
1 spm 13.5 mm Vallée de Mai, Praslin 19.iii.2002.

MRACT 1 spm 12.5 mm. 13.534 labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Praslin, Vallée de Mai, 22-23.vii.1972. Rec P L G Benoit & J J Van Mol.

MRACT 4 spms 16. 15.5, 12 and 11.5 mm. 13.555, labelled *Cryptops philammus* Att. (fôret mélangée humide). Det. J. M. Demange, 1980. Loc. Séchelles: Mahé Centre, La Misère, 438m, 12.vii.1972. Rec. P L G Benoit & J J Van Mol.

MRACT 4 spms 17, 15, 14 and 8 mm. 13.596, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Silhouette, Mare aux Cochons, 500m., 2-8.vii.1972. Rec. P L G Benoit & J J Van Mol.

MRACT 2 spms 13 and 8 mm 13.606, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Mahé nord, Mt. Crève Coeur versant Ouest. 300m 11.vi.1972. Rec. P L G Benoit & J J Van Mol.

Description: Body length 7.0-17 mm. Colour light orange, greyish orange or light brown without dark subcutaneous pigment.

Antennomeres 17, antennomere 1 with long and medium setae with gradual transition through 2 and 3 to antennomere 4 with dense short setae and basal whorl of long setae.

Head plate and tergite 1 without sutures, tergite 1 overlying the posterior edge of the head plate. Clypeus in larger specimens with 2+1+2+2 setae and a row of eight to ten setae in front of the labrum. Anterior edge of forcipular coxosternum very slightly biconvex and with three four or five long and or medium and one or small two setae but generally a maximum of five to seven setae in all behind the edge on each side (Fig. 11). Rarely, the setae only just behind the anterior edge (Fig. 12). Calyx of poison gland ovoid and situated in the anterior third of the forcipular trochanteroprefemur (Fig. 13).

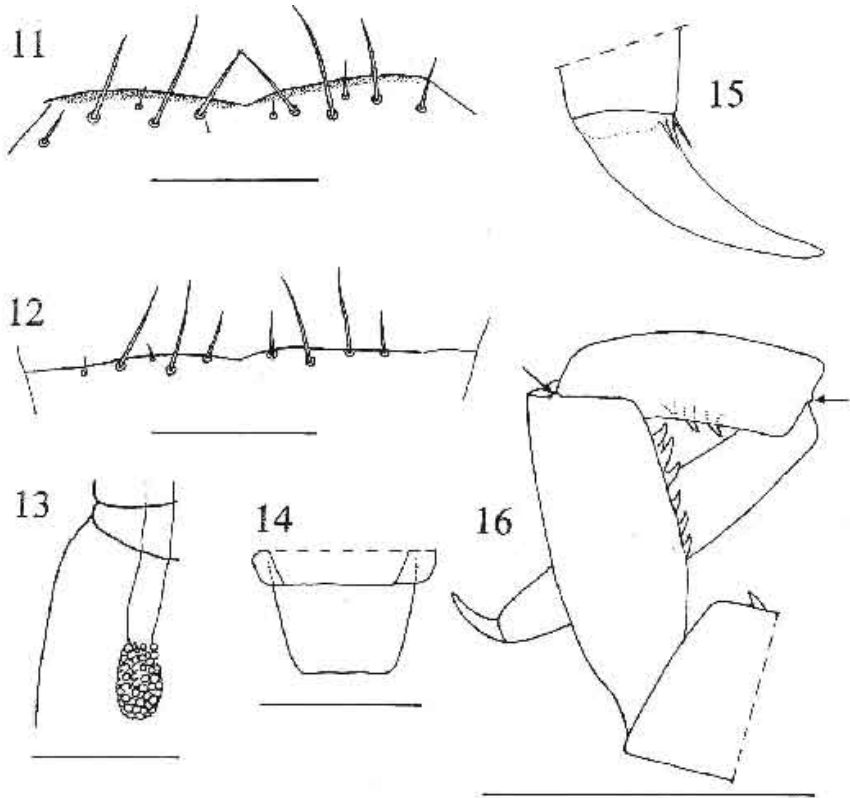
Tergite paramedian sulci from tergite 4, 5 or 6, but difficult to see. Lateral crescentic sulci from 3 or 4. Paramedian sutures very fine and incomplete (almost complete on posterior tergites). Sternites with longitudinal and transverse sulci. Transverse apodeme present. Sternite 21 with sides converging very slightly and hind border straight (Fig. 14).

Coxopleuron with 19 to 48 pores, occupying 64 to 70% of coxopleuron with five to fifteen small setae in the pore field, three to seven behind and four to nine on the posterior edge of the coxopleuron.

Legs 1-19 with or without tarsus weakly divided. Under high power magnification it is not clear whether there are one or two accessory spurs on the tarsal claw. Often only one is seen, but when cleared in Hoyer's mountant (Le Niol spm 5) a smaller second spur is seen (Fig. 15). Leg 20 with dense fine setae ventrally on prefemur, femur and tibia in some specimens.



Ultimate legs (Le Niol spm 1) with strong setae on anterior, ventral and posterior surfaces of prefemur and on ventral and posterior surfaces of femur. No distal tubercles on tibia, small anterodistal tubercle on tarsus. Anterior and posterior tubercles on tibia and tarsus I (Chemin Montagne Possee spm 2). A loose leg with anterior tubercle on tibia and (very small) on tarsus and narrow glabrous area postero-distally on prefemur but this is not seen in other specimens. A single saw tooth on the femur, six to ten on the tibia and three to five on the tarsus (Fig. 16). In two specimens there were, unilaterally, two saw teeth on the femur. In one specimen from Mahé Centre (MRACT 13.555) and one from Silhouette (MRACT) 13.596 there are two saw teeth on one of the prefemora. Spiracles round or slightly oval.



**Figs. 11-16.** *Cryptops doriae*. 11). Anterior margin of forcipular coxosternum Le Niol spm 3. 12). Anterior margin of forcipular coxosternum LeNiol spm 1. 13). Forcipular poison claw calyx Le Niol sp. 1. 14). Sternite 21 Le Niol spm 3. 15). Tarsal claw Le Niol spm 5. 16). Ultimate leg femur, tibia and tarsus I and II Chemin Montagne Possee spm 2. Tubercles arrowed, setae not shown. Scale line = 0.5mm, except Fig. 13 = 0.1mm

Maturity: Males between 11.5 and 15 mm long contained two or three spermatophores.  
Juvenile specimen (Le Niol spm 4): Length 7.0 mm has 2+1+2 clypeal setae and a row of six in front of the labrum, seven coxal pores, one seta in the pore field, one behind and three on the posterior edge.

Remarks: The Seychelles specimens fall within the diagnosis of *C. doriae* given by Lewis (1999). They are, however, much smaller than many of the Nepalese specimens described by Lewis, a maximum of 17 mm as compared with up to 33 mm. There is also a smaller number of coxal pores, up to 48 in the Seychelles material as compared to a maximum of 72.

Distribution: Seychelles, India, Burma, Vietnam, Indonesia (Java), Papua New Guinea. Introduced into Cornwall, UK in wet tropical biome of Eden Project (Lewis in preparation).

***Cryptops (C.) decoratus* LAWRENCE 1960**

(Figs. 17-25)

*Cryptops decoratus* Lawrence, 1960: 84, figs. 25 c, d, 26.

*Cryptops decoratus*: Lewis, 2002: 96, figs. 36-43.

Material examined

Spms 1 & 2, 13 and 10 mm, Aride, –.vii.2000 (V).

Spms 3-7, 9.5, 11.5, 12 and 14 mm, Aride, –.xi 2000.

2 spms 7.5 and 9.5 mm, L2 Mon Plaisir, Silhouette Litter, 8.vii.2000.

1 spm 14 mm, D3 *Dracaena reflexa* crown, Mon Plaisir, Silhouette 550m asl 9.viii.2000.

2 spms 7 and 9 mm, Booby, 20.iii.2002.

MRACT 4 spms 7.5, 9.5, 10 and 10 mm. 13.520, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Mahé Centre, Morne Séchellois. 750-800 m. 13-17.vii.1972. Rec. P L G Benoit & J J Van Mol.

MRACT 3 spms 12, 9 and 13.5mm. 13.534, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Praslin, Vallée de Mai, 22-23.vii.1972. Rec P L G Benoit & J J Van Mol.

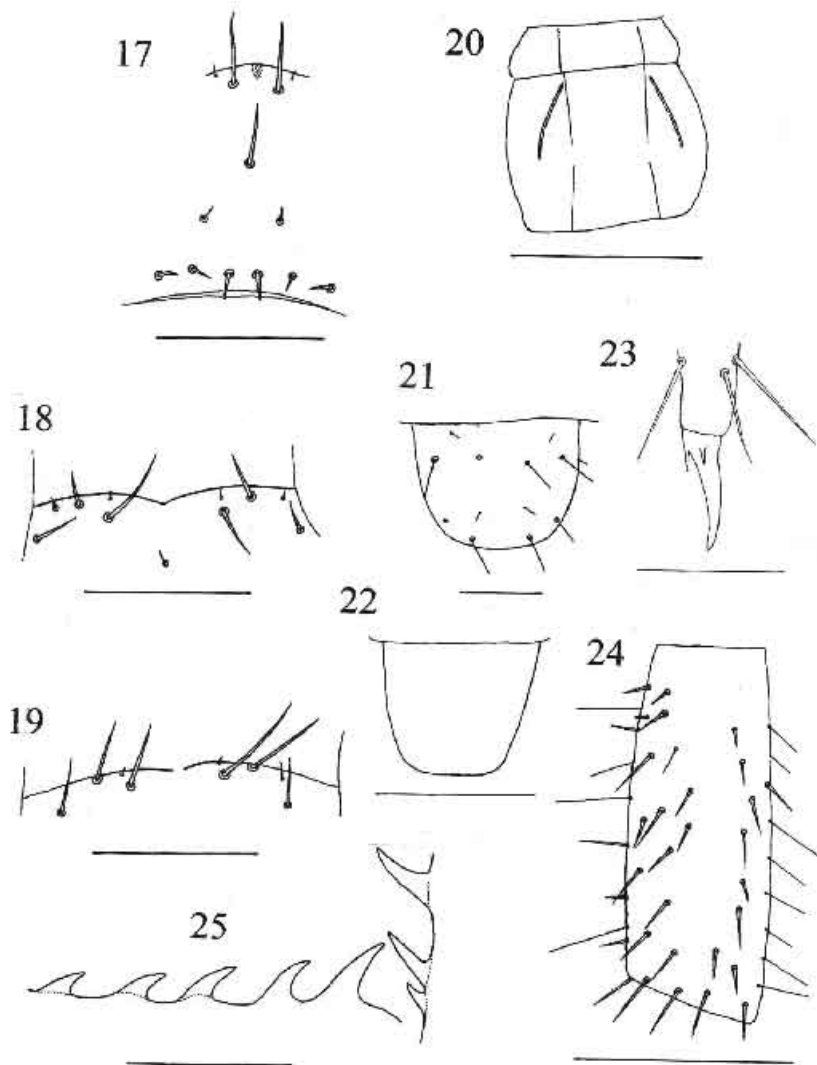
MRACT 11 spms (only 5 measured – 7, 7.5, 7.5, 8.5 and 12 mm, 13.575, labelled *Cryptops philammus* Att. (sur *Pandanus seychellarum*). Det. J. M. Demange, 1980. Loc. Séchelles: Silhouette, Mare aux Cochons, 500 m., 3-4.vii.1972. Rec P L G Benoit & J J Van Mol.

MRACT 1 spm 8.5 mm, 13.596, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Silhouette, Mare aux Cochons, 500m., 2-8.vii.1972. Rec. P L G Benoit & J J Van Mol.

Description of Seychelles material: Body length 7.5-14 mm. Colour: greyish yellow, pale yellow or greyish-orange with or without dark subcutaneous pigment varying from pale grey to very dark grey/black best developed beneath tergites 2 to 7 or 8 and again 18

on 18 to 20.

Antennomeres 17, the basal with long and medium setae with gradual transition through 2 and 3 to antennomere 4 with dense short setae and basal whorl of long setae.



**Figs. 17-25.** *Cryptops decoratus*. 17). Clypeus spm 1 Aride. 18). Anterior margin of forcipular coxosternum Aride spm 3. 19). Anterior margin of forcipular coxosternum Aride spm 5. 20). Tergite 8 Aride spm 3. 21). Sternite 21 Aride spm 5. 22). Sternite 21, Mahé Centre, La Misère (13.555). 23). Distal region of tarsus II and tarsal claw Aride spm 4. 24). Ultimate leg prefemur, internal (posterior view) Praslin, Vallée de Mai spm 1. 25). Tibial and tarsal saw teeth of ultimate leg Silhouette spm D3. Scale line=0.1mm, except Figs. 20&22=0.5mm.

Head plate and tergite 1 without sutures, tergite 1 overlying the posterior edge of the head plate. Clypeus with 2+1+2+setae and a row of six setae in front of the labrum (Fig. 17). Anterior edge of forcipular coxosternum very slightly biconvex, typically with two long or medium setae and two small behind anterior edge and a third set farther back on each side (Fig. 18). Sometimes one of these setae immediately behind the edge (Fig. 19). Calyx of poison gland ovoid and situated in the anterior third of the forcipular trochanteroprefemur.

Paramedian sulci present at least from tergite 6. Lateral crescentic sulci from 3, 4 or 5. Paramedian sutures very fine and incomplete (almost complete on posterior tergites) (Fig. 20). Sternites with longitudinal and transverse sulci. Transverse apodeme present. Sternite 21 with sides converging very slightly and hind border broadly rounded (Fig. 21) or, rarely, with hind border straight and posterior corners rounded (Fig. 22).

Coxopleuron with 8 to 14 pores occupying 64 to 70% of coxopleuron with four to six minute setae in the pore field, typically only one behind and three or four on the posterior edge of the coxopleuron.

Legs 1-19 without or with very slight indication of tarsal division. With two short accessory spurs on the tarsal claw (Fig. 23), the second often very difficult to make out so may be scored as one. Leg 20 with dense fine setae ventrally prefemur, femur and tibia in some specimens.

Ultimate legs with strong setae on anterior, ventral and posterior surfaces of prefemur and on ventral and posterior surfaces of femur. A longitudinal glabrous strip internally on prefemur (Fig. 24) except *Aride* spm 1. No distal tubercles on tibia, small anterodistal tubercle on tarsus. Anterior tubercle on tibia or none. No saw tooth on the femur, four or five on the tibia and three on the tarsus (Fig. 25). Spiracles round.

Maturity: Males 9.5 mm long and above contained two or three spermatophores and a female 13 mm long contained eggs.

Remarks: The presence of dark subcutaneous pigment is a characteristic of some but not all the Seychelles *Cryptops decoratus* as some lack the pigment. All specimens from Mauritius described by Lewis (2002) were pigmented although this was very much reduced in those from Serpent Island.

Distribution: Seychelles, Madagascar, Mauritius.

***Cryptops (C.) cf. kemp* SILVESTRI, 1924**  
(Figs. 26-34)

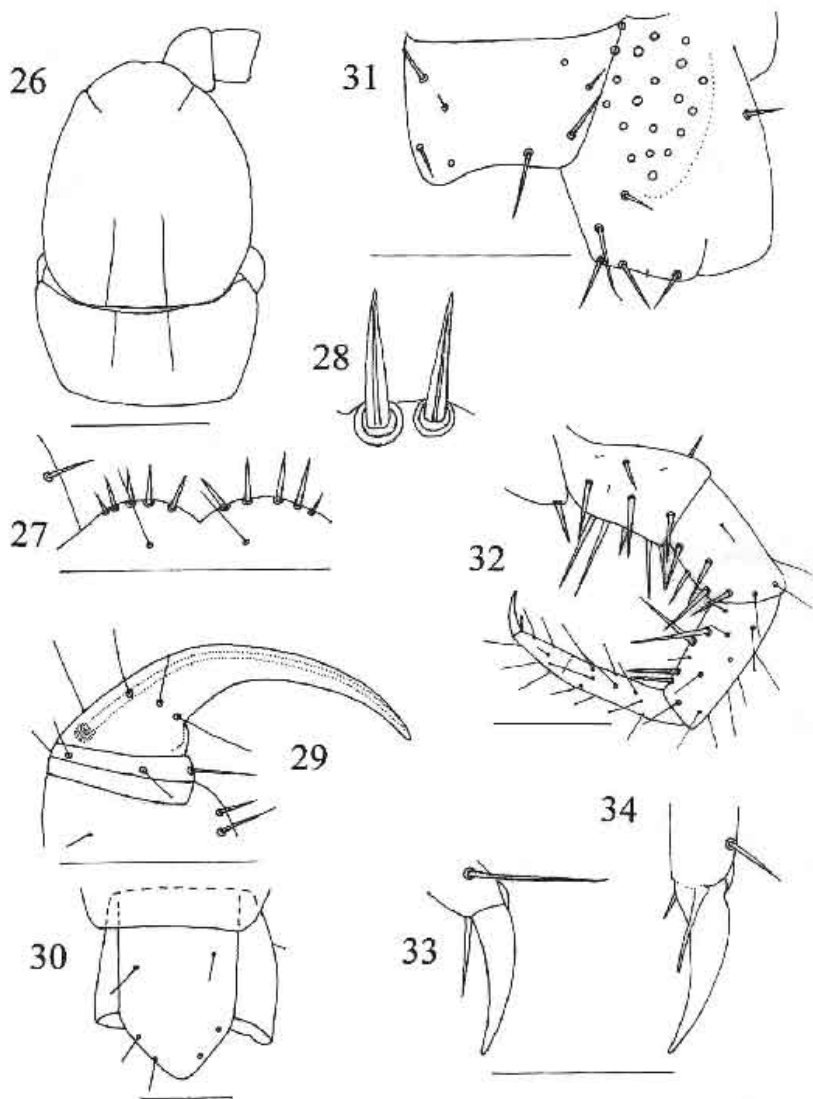
Material examined

Spm 1, 14.5 mm, Vallée de Mai, Praslin, 19.iii.2002 (V).

MRACT 1 spm (spm 2) ♂ 11 mm. 13.534, labelled *Cryptops philammus* Att. Det. J. M. Demange, 1980. Loc. Séchelles: Praslin, Vallée de Mai, 22-23.vii.1972. Rec P L G Benoit & J J Van Mol.

Description of Praslin material: NB Both specimens lack the ultimate legs and spm 2 has the terminal segments damaged. Body length 14.5 mm and 11 mm. Colour (spm.

1) brownish yellow pale yellow, head plate, T1 and T2 brownish orange, without dark subcutaneous pigment.



**Figs. 26-34.** *Cryptops cf. kempi*. 26). Head plate and tergite 1 spm 2. 27). Anterior edge of forcipular coxosternum spm 2. 28). Detail of forcipular coxosternal setae spm 2. 29). Distal region of right forcipule spm 2. 30). Tergite 21 spm 2. 31). Sternite 21 and ultimate leg coxopleuron spm 2. 32). Leg 3 spm 1. 33). Tarsal claw of leg 3 spm 1. 34). Tarsal claw of leg from mid-trunk region spm 1. Scale line = 0.25mm, except Fig. 26 = 0.5mm and Figs. 33 & 34 = 0.1mm.

Antennomeres 17+16(damaged) in spm 1, 16+16 (both damaged) in spm. 2. Distal antennomeres long, ratio of length to width of antennomere 14 2.2:1 in spm 1, but 1.9:1 in spm 2. Antennomeres 1 and 2 with long setae, antennomere 3 with some short setae in distal half, 4, 5 and 6 with short setae in distal half and two irregular whorls of long setae proximally. By antennomere 9 distal two-thirds with short setae with an irregular basal whorl of long setae.

Head plate overlying tergite 1 and with incomplete longitudinal sutures, the anterior sutures oblique and very short, the posterior occupying 44% of the head plate (Fig. 26). Clypeus in spm 2 with four post antennal setae, 1 + 2 small setae (2 + 1 minute in spm 2) posterior to these and eight prelabral setae. Anterior edge of forcipular coxosternum strongly convex on each side with 6+7 (spm 1) or 5+5 short stout marginal setae (Fig. 27 & 28) and 1+1 prominent setae behind. Calyx of poison gland situated in proximal end of forcipular tarsungulum (Fig. 29).

Tergite 1 with fine anterior transverse suture and paramedian sutures originating thereon incomplete posteriorly (Fig. 26). Tergite 2 very narrow, ratio of length to width 1:4. Tergite paramedian sutures very fine. The extent of paramedian sutures and sulci not determined. Lateral oblique suture on tergites 4 to 19. Tergite 21 markedly triangular posteriorly (Fig. 30) without median suture.

Sternites with longitudinal and transverse sulci, their extent not determined. Transverse sternital apodemes present. Sternite 21 with posterior border concave (Fig. 31).

Coxopleuron with c. 48 small pores in spm 1, 20 in spm 2 (Fig. 31). With pore-free strip occupying 40-43 % of the distance between the anterior margin of the pore field and the posterior edge of the coxopleuron.

Legs 1-19 with long spine-like setae, mostly ventrally on prefemur, femur and tibia, fine setae on tarsus (Fig. 32). Which shows slight signs of subdivision or does not. Tarsal claw with a long prominent accessory spur as much as 60% the length of the claw. (Fig. 33). A second shorter accessory spur present except on some anterior legs (Fig. 34).

Remarks: The specimens are very distinctive yet cannot be assigned to a species as the ultimate legs are missing. Attems' (1930) key would suggest that they are most closely related to *C. kempi* Silvestri, 1924 from Siju cave, Garo Hills, Assam and *C. cornifer* Chamberlin, 1918 from Cuba but the latter has complete cephalic paramedian sutures whereas in *C. kempi* and the specimens described here they are incomplete.

The Praslin specimens are very similar to Silvestri's species, particularly notable being the biconvex anterior margin of the forcipular coxosternum with strong marginal setae, the long spine-like setae of the legs ("setis subspiniiformibus") and the long accessory spur of the tarsal claw. Differences are the incomplete paramedian sutures on T1 (complete in *C. kempi*) and the hind border of sternite 21 concave (rounded in *C. kempi*). Further material from the Seychelles and a re-examination of the type of *C. kempi* is required in order to establish their relationship.

***Cryptops (C.) philammus* ATTEMS, 1928**

*Cryptops philammus* Attems, 1928: 89, Fig. 267.

*C. (C.) philammus*: Attems, 1930 Das Tierreich 54:214, Fig. 267.

*C. philammus*: Demange, 1981: 642, Fig. 10.

Remarks: Recorded from several localities in Cape Province, South Africa, Demange (1981) noted that *Cryptops philammus* was particularly abundant in the Seychelles. It was the sole *Cryptops* species that he recorded from the islands it having been collected on Mahé, Praslin, Silhouette and Curieuse: 114 specimens in all. I have examined a representative selection of these specimens (see above): 21 from Mahé, 15 from Praslin and 18 from Silhouette. None were *C. philammus*. Twenty three were examined in detail of which 11 proved to be *C. doriae*, 11 *C. decoratus* and one, *C. cf. kemp*i

The Seychelles specimens run down to *C. philammus* in Demange's (1963) key to African *Cryptops* but are clearly not this species. Attems (1928) described the porose area of the coxopleuron as consisting of relatively few pores, the last near the posterior margin. This is not the case in the species from the Seychelles here examined, all of which have a wide poreless strip in front of the posterior margin of the coxosternum, furthermore *C. philammus* has no saw tooth on the femur of the ultimate leg as does *C. doriae*. There is no evidence for the occurrence of *C. philammus* in the Seychelles and I therefore delete it from the Seychelles fauna.

Demange (1963) noted that many specimens have been decolourised in alcohol but some show the black maculations. An alternative interpretation is that *C. doriae* lacks the dark pigmentation and that its occurrence in *C. decoratus* is variable. He also described secondary sexual characters in the ultimate legs, shorter and differing from the female in pilosity and spines I have not observed this.

***Cryptops (Cryptops) spp.***

1 spm 7.5mm, L1, Jardin Marron, (Coco de Mer) Silhouette litter, 8.vii.2000. Colour: yellowish white with grey subcutaneous pigment. .

1 spm 8 mm, Vallée de Mai, Praslin, 19.iii.2002. With brown subcutaneous pigment.

1 spm 8.5 mm, Anonyme, 12.xii.2001.

1spm 13 mm, Curieuse, 20.iii.2002. Brownish orange.

1 spm 8 mm, St Anne, 10.xii.2001 With brown subcutaneous pigment.

Remarks: These specimens are either *C. doriae* or *C. decoratus* but they lack ultimate legs and cannot be determined with certainty although those with subcutaneous pigment are probably *C. decoratus*.

**Discussion**

As noted by Lewis (2002) subcuticular pigmentation can be variable in *Cryptops* as can the degree of subdivision of the tarsus on legs 1 to 19 and the second tarsal claw spine (=accessory spur) can easily be overlooked. Likewise, as shown by Lewis (1999), the distal tubercles on the tibia and tarsus I of the ultimate legs (which he incorrectly termed end teeth or unciform tubercles) may be present or absent. Lewis, Edgecombe



and Shelley (2005) did not consider these very small structures when they proposed a standardised terminology for taxonomic characters in the Scolopendromorpha.

It should be reiterated that these characters should be used with great caution and only in conjunction with others.

### Acknowledgements

My thanks are due to Justin Gerlach, (Cambridge and Nature Protection Trust of Seychelles), Jan Beccaloni (The Natural History Museum, London) and Didier Van den Spiegel (Musée Royale de l'Afrique Centrale, Tervuren) for the loan of specimens, to Greg Edgecombe for advice on *Cryptops* and to Alessandro Minelli for advice on matters taxonomic. My thanks are also due to Dennis Parsons and the other staff of the Somerset County Museum where this work was carried out for providing excellent working conditions. Justin Gerlach also provided information and advice on a number of additional matters.

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## A new species of Scatopsidae (Diptera) from the Seychelles islands

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Scatopsids are small-sized, rather inconspicuous non-biting midges with short antennae, characteristic eye-bridge over antennae and reduced wing venation. About 350 species are known worldwide but tropical faunas are still very poorly known, with probably very numerous undescribed species. Known larvae are saprophagous, living in various decaying organic media.

Two species have been recorded from Seychelles, *Psectrosciara brunnescens* (Brunetti, 1911) and *Rhegmoclema rufithorax* Enderlein, 1912. Both result from the scanty material gathered during the Percy Sladen Trust expedition 1905 which was summarized by Enderlein (1914). Only one specimen of Scatopsidae was collected during the recent Indian Ocean Biodiversity Assessment by Justin Gerlach. It belongs to a new species of the genus *Rhegmoclemina* which is described below.

### ***Rhegmoclemina botulus* sp. nov.** (Figs. 1-3)

**Diagnosis:** the shape of the elongated spermatheca is unique among known species of Scatopsidae (Fig. 3).

**Description:** Body length 1.1mm. Head damaged, flagellar segments of antennae lacking; palpus short, rounded. Thorax: anterior spiracular sclerite (Fig. 2) elongate, spiracle large, anterior, submedian. A row of 10 supra-alar setae, not markedly different from vicinuous pilosity. Legs brown, shortened, tarsi and basal portion of tibiae lighter, a basal submedian brown ring on tibiae, fore femora thickened, all tibiae clavate, regularly widening towards apex. Wing (Fig. 1) 1.0mm long. Anterior veins yellowish brown, posterior veins hyaline, no setae on posterior veins. Membrane entirely microtrichiose. Veins of sector R reaching about middle of wing, M fork elongate,  $M_1$  and  $M_2$  diverging from base, sinuosity of CuA2 weak. Stem of halter devoid of setae.

Abdomen (Fig. 3): sternites and tergites simple in shape, sternites widening towards apex of abdomen; tergite 8 very narrow, articulated with a pair of shortened apparent cerci; sternite 8 divided in 2 lateral lobes; genitalia with atrial sclerotization elongate; spermatheca very peculiar in shape, elongate, sausage like, with subterminal spine-like cuticular expansions on both ends.

**Type material:** SILHOUETTE. La Passe (above Dauban Mausoleum), Malaise trap, 1-4.VII.2000, 1♀, J. Gerlach (NHML). The dissected female holotype is slide mounted in Euparal.

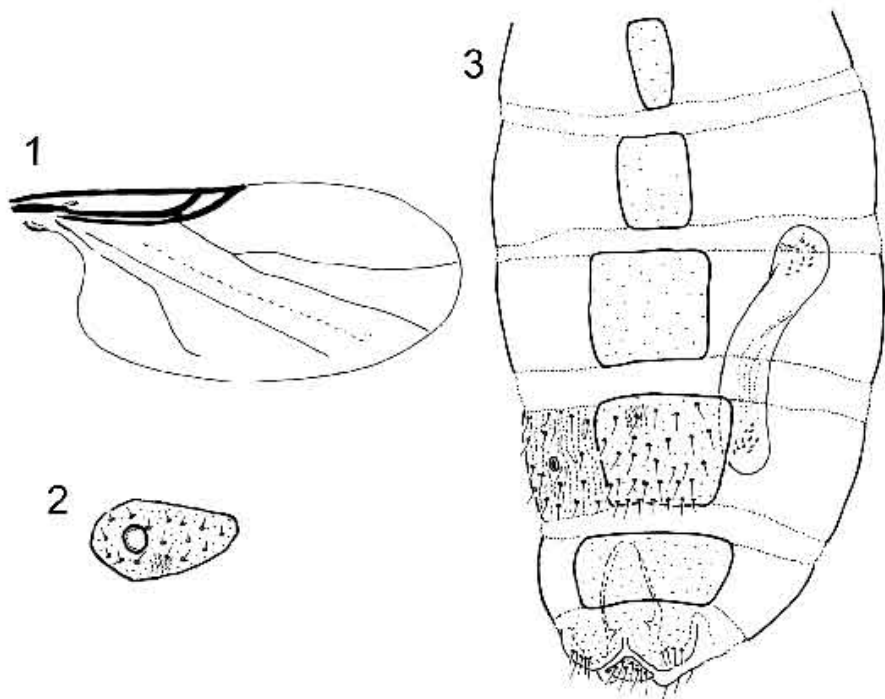
**Distribution:** Known only from Seychelles Islands (Silhouette).

Ecology: The only known specimen was caught in a Malaise Trap placed in a rain forest.

Etymology: The specific name derives from *botulus*, the latin word for sausage and refers to the unusual shape of the genital vesica of this species.

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**Figs 1-3.** *Rhegmoclemina botulus* sp. nov.(female holotype) : 1. Wing (diagrammatic).  
– 2. Anterior spiracular sclerite. – 3. Abdomen and genitalia (ventral view).

## New longlegged flies (Diptera, Dolichopodidae) of Seychelles

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**Abstract:** Dolichopodids of four islands of the Seychelles republic were studied: Silhouette I., North I., D'Arros (Amirante Is) and Picard I. (Aldabra Is). 28 species were found of which 22 species are recorded for the first time on the Seychelles. *Aldabromyia* gen. nov. is described with *A. plagiochaeta* sp. nov. as type species. Nine species are described as new to science: *Aldabromyia plagiochaeta* sp. n., *Chaetogonopteron marronense* sp. n., *Chaetogonopteron seychellense* sp. n., *Ethiosciapus prysjonesi* sp. n., *Lichtwardtia aldabrensis* sp. n., *Mascaromyia digrediens* sp. n., *Mascaromyia gerlachi* sp. n., *Medetera pachyneura* sp. n. and *Sympycnus allotarsis* sp. n.. Another seven species are briefly described, but not named. Some of the species described by Lamb (1922) have been re-described based on our material.

**Key-words:** Seychelles, Diptera Dolichopodidae, new species.

### INTRODUCTION

By their isolated position in the western Indian Ocean, northeast of Madagascar, the Seychelles islands have a peculiar fauna. In 1922 Charles Georges Lamb published a remarkable article about Diptera species (Asilidae, Scenopinidae, Dolichopodidae, Pipunculidae, and Syrphidae) found during the Percy Sladen Trust expedition to the Indian Ocean in 1905. In this article he described three new genera from the Seychelles within the family Dolichopodidae, viz. *Argyrochlamys*, *Craterophorus*, and *Urodolichus*. In all he mentioned 31 species (including 3 species with only indication of the genus) of Dolichopodidae found on the Seychelles (including Aldabra), 22 of which were new to science.

Before 1922 only one dolichopodid species was known from the Seychelles: *Psilopus leptogaster* Thomson, 1869, mentioned by Giglio-Tos (1895: 359) [now in the genus *Mascaromyia* Bickel, 1994; Lamb's species *Psilopus librativertex* is synonymized with this species by Grichanov (2003: 335)]. After 1922, only two other species were added: *Sympycnus albipes* Lamb, 1926 (now in the genus *Chaetogonopteron*), described by Lamb (1926: 548) from Rodriguez, and mentioned from the Seychelles by Parent (1934: 300), and *Bickelia subparallela* Grichanov, 1996, mentioned from the Seychelles by Grichanov (1996: 121), now considered as a synonym of *Bickelia parallela* (Macquart, 1842) (Grichanov 2003: 331).

The present paper deals with new collected material. In 1976 a malaise trap, placed by R. Prys-Jones into mixed scrub at Picard on Aldabra, yielded some, partly new, species of Dolichopodidae, and some more species were gathered by Justin

Gerlach in 2000, 2001 and 2003 on several isles of the Seychelles (Silhouette, North Island, D'Arros). In all 28 species were found in that material: one new genus and 9 new species are described here. A number of species that are not named because only female specimens are found or that there are doubts about the status, are diagnosed, just to indicate that more species are present in the area.

### **Material and methods**

Material was collected on four islands: Silhouette I. 20km Northwest of Mahé, North I., 5 km north of Silhouette I., D'Arros (part of Amirante Is) 200km south of Mahé and Picard I. of the Aldabra Island group at 1,150km Southeast of Mahé and 350km northwest of Madagascar.

All material is stored in 70% alcohol in the collections of the Royal Belgian Institute of Natural Sciences, Brussels. The number of the glass tubes in which the specimens are stored are given behind the locality (e.g. S7 means tube 7 of the Seychelles samples).

## **SYSTEMATIC ACCOUNT**

### **Subfamily Sciapodinae**

#### ***Aldabromyia* gen. nov.**

Etymology: Aldabra, where the type species has been found + Greek *myia*, 'fly'. Gender feminine.

#### Diagnosis of male.

*Head*. Vertex rather deeply excavated; ocellar tubercle high, but not reaching level of upper eye margins. Face very narrow; clypeus a little wider than epistoma, not separated from eye margins, hardly bulging. Palpi and rostrum small. A pair of strong ocellar bristles; two short, thin postocellars; at either side one postvertical bristle; frons at either side with a thin, hairlike bristle. Lower postocular cilia not lengthened. Antenna short; 2<sup>nd</sup> segment dorsally and ventrally with rather short and weak bristles; 3<sup>rd</sup> segment small, more or less triangular; arista dorsal, rather short.

*Thorax*. acr biseriate, very short; 5 pairs of strong dc. Scutellum with long marginals (about 2/3 as long as the marginals).

*Legs*. Fore coxa with 3 strong bristles on apical 1/3; hind coxa with a thin yellow bristle, and some short, yellow bristly hairs. Femora without bristles. Fore and hind tibiae nearly bristleless; mid tibia with a row of av on apical half. 1<sup>st</sup> segment of fore tarsus broadened and flattened; all segments of hind tarsus somewhat broadened and flattened. 1<sup>st</sup> segment of hind tarsus more than twice as long as 2<sup>nd</sup> segment.

*Wing* hyaline, very feebly clouded. m1 rises from m1+2 with an angle of less than 90°, and converges towards r4+5 with a pronounced curve, ending above wing tip; m2 not faded, reaching nearly to wing margin. tp straight, oblique, longer than apical part of m3+4.

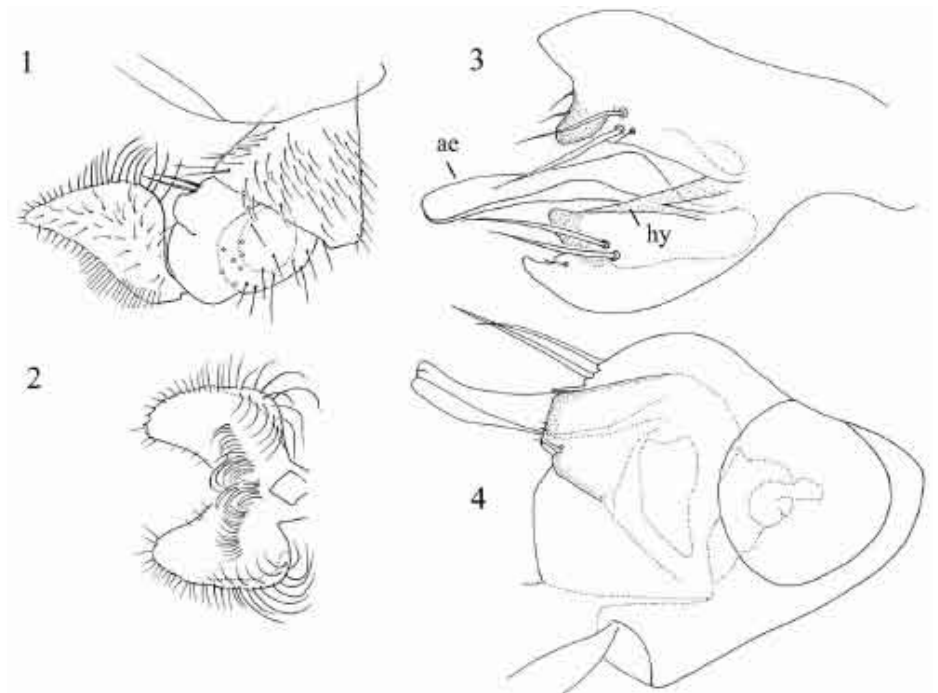
*Abdomen* very long and slender. Hypopygium small; cercus more or less triangular, blade-like.

Type species: *Aldabromyia plagiochaeta* spec. nova.

Remarks: This genus does not agree with any of the genera as described by Bickel (1994), owing to the following combination of characters:

- tp straight.
- 5 strong dc; acr short.
- laterals of scutellum very long.
- arista dorsal, relatively short, on a small 3<sup>rd</sup> antennal segment.
- 2<sup>nd</sup> antennal segment with only short bristles.
- cercus of hypopygium bladelike, not lengthened.
- nearly bristleless legs.
- on either side of frons only one, weak vertical seta.
- narrow face.
- 1<sup>st</sup> segment of fore tarsus remarkably broadened and flattened.

*Aldabromyia* seems to be closely related to *Mascaromyia* Bickel, 1994, but differs from it especially by the long lateral bristles on the scutellum (absent in *Mascaromyia*).



Figs. 1-4. *Aldabromyia plagiochaeta* gen. novum, spec. nova., paratype male, 1. tip abdomen; 2. ventral view of cerci; 3. ventral view of epandrium; 4. lateral view of epandrium. Ae: aedeagus; Hy: hypandrium.

***Aldabromyia plagiochaeta* spec. nova Figs. 1-4.**

Material examined: Holotype ♂, 3♂♂ paratypes from Aldabra: Picard, 27/4/1974-21/1/1976 (malaise trap in mixed scrub), collected by R. Prys-Jones (S50 holotype, S37 paratypes). Etymology: Greek *plagiós*, 'on the side' + *chaitè*, 'bristle', alluding to the long lateral bristles on the scutellum.

Male. *Body length*: 4.9-5.4mm; *wing length*: 2.9-3.2mm.

*Head*. Vertex and frons shining metallic green. Face very narrow, metallic green, with a greyish white dusting; epistoma with nearly parallel side margins; clypeus slightly wider than epistoma, ending above level of lower eye margins. Palpus small, brownish black, with a pair of small black bristles. Rostrum short, yellow. A pair of strong, black ocellar bristles. 2 short, thin, black postocellars. At either side 1 black postvertical bristle. Lateral and lower postocular cilia yellowish white. Occiput shining metallic green.

*Antenna* short; basal segments dark brown, 3<sup>rd</sup> segment brownish yellow. 2<sup>nd</sup> segment dorsally and ventrally with rather short and weak black bristlets. 3<sup>rd</sup> segment small, a little longer than deep, more or less triangular, with a rounded tip. Arista dorsal, relatively short (hardly as long as face), thin, black.

*Thorax*. Thorax and scutellum shining dark metallic green, with coppery reflections. acr biseriate, very short. 5 pairs of strong, black dc. Scutellum with long laterals (about 2/3 as long as the marginals). Propleura bare.

*Legs*. Fore coxa yellow (coxa narrowly browned at base). Mid and hind coxae dark brown, apically narrowly yellow. Trochanters, femora and tibiae yellow, but hind femur apically, and hind tibia entirely feebly browned. Tarsi strongly darkened, but 1<sup>st</sup> segment of fore tarsus yellow, and 1<sup>st</sup> segment of mid tarsus basally yellowish. *Fore leg*. Coxa anteriorly with pale yellow hairs, and 3 strong, black bristles on apical 1/3. Femur without bristles; ventrally some very short yellow hairs. Tibia a little longer than femur, without bristles, apart from a ventral bristle at apex. 1<sup>st</sup> segment of tarsus soon after its base strongly broadened and flattened, ovaloid, with rows of very short, black bristlets. Length of tibia and tarsal segments (in mm): 1.2:0.8:0.3:0.2:0.15:0.1. *Mid leg*. Coxa anteriorly and exteriorly with yellow hairs. Femur ventrally without bristles. Tibia longer than femur; anteroventrally on apical half a row of bristles (very short at middle of tibia, growing longer towards its tip). Length of tibia and tarsal segments (in mm): 2.0:1.25:0.4:0.25:0.15:0.1. *Hind leg*. Coxa exteriorly with a thin yellow bristle and some short, yellow bristly hairs. Femur without bristles. Tibia much longer than femur (about 4:3); no bristles; some of the dorsal and ventral hairs are slightly lengthened. 1<sup>st</sup> tarsal segment ventrally shortly spinulose; all tarsal segments somewhat broadened and flattened. Length of tibia and tarsal segments (in mm): 2.15:1.2:0.45:0.25:0.15:0.1.

*Wing* hyaline, very feebly clouded on apical half towards costa and around m1; veins dark brown. Tp straight, oblique, longer than apical part of m3+4 (about 3:2). No anal vein. Halter yellow. Squama yellow, with yellow cilia.

*Abdomen* very long and slender, shining metallic green; terga 2-4 with broad dull black anterior and narrow dull black posterior borders; terga 5 and 6 mostly dull black. Hairs and bristles on terga short, black. Segment 7 very short, blackish brown. Hypopygium small, dark brown, with dark appendages. Cercus more or less triangular, blade-like.



## ***Amblypsilopus* Bigot, 1889**

### ***Amblypsilopus* sp. S4**

Material examined: 1 ♀, North island (0m), 29/7/2000 (S4)

A largely yellow coloured species with antenna pale yellow (arista broken off). 3 acr; 2 dc posteriorly. Two species of *Amblypsilopus* are known from the Seychelles. It was not possible to identify the present female.

### ***Amblypsilopus* sp. S30**

Material examined: 1 ♂, *Hevea brasiliensis* plantation, Jardin Marron, Silhouette (350m). 7-10/7/2000 (S30).

Male: *Body length*: about 5.3mm; *wing length*: 4.7mm.

*Head*. Vertex deeply excavated; ocellar tubercle high, but not reaching level of upper eye margins. Vertex, frons and epistoma shining metallic green. Epistoma hardly bulging, broad, its width beneath antennae about 5/6 of the width of an eye, seen from in front, at same level; inner eye margins parallel. Clypeus yellowish, with a white dusting, narrower and shorter than epistoma, distinctly separated from eye margins, not bulging, slightly narrowing downwards, and ending in a broadly rounded apex below level of lower eye margins. Palpus small, pale yellow, *with yellow hairs bristles*. Rostrum short, pale yellow. A pair of long and strong, black ocellar bristles. No postocellars. At either side 3 thin, yellow postvertical bristle, shorter and much weaker than the ocellars. Frons without hairs or bristles. Postocular cilia yellowish white. Occiput shining metallic green.

*Antenna* yellow, short. 2<sup>nd</sup> segment dorsally and ventrally with a strong, black bristle (a little longer than 3<sup>rd</sup> antennal segment). 3<sup>rd</sup> segment short, triangular, with a blunt tip. Arista apical or dorso-apical, long (longer than thorax), thin, black.

*Thorax*. Thorax and scutellum shining dark *metallic green*, with coppery reflections; metaepimeron yellow. 2 pairs of well-developed, long black acr on anterior half of mesoscutum. 2 pairs of strong, black dc on posterior half, preceded by 3 very short and thin bristlets. Scutellum without laterals. Propleura bare.

*Legs* very long and slender. Legs and coxae yellow; mid and hind coxae exteriorly with a small brown spot. *Fore leg*. Coxa anteriorly with short pale yellow hairs, and 3 rather short, pale yellow bristles at apex. Femur without bristles. Tibia about 1.5 times as long as femur; near apex a thin, curved pv. 1<sup>st</sup> segment of tarsus ventrally at base with a cluster of very short bristlets, and one longer and stronger black bristle. Length of tibia and tarsal segments (in mm): 1.8:1.8:0.5:0.4:0.25:0.15. *Mid leg*. Coxa anteriorly and exteriorly with *pale yellow* hairs and bristles. Femur ventrally with 2 weak, thin bristles on basal 1/3, and a yet weaker posteroventral bristle at middle. Tibia: no bristles, apart from 2 apicals. Length of tibia and tarsal segments (in mm): 2.5:1.9:0.55:0.3:0.15:0.05. *Hind leg*. Coxa exteriorly with a yellow exterior bristle. Femur and tibia: no real bristles, but some of the hairs on tibia slightly lengthened and bristlelike. Length of tibia and tarsal segments (in mm): 3.0:1.4:0.6:0.35:0.2:0.1.

*Wing* hyaline, feebly browned towards its anterior margin on apical 1/3; veins dark brown; costa brown, with very short, black spinules. m1 rises from m1+2 with an angle 32



of about 90°, and converges towards r4+5 with a regular curve, ending above wing tip; m2 faded, but visible on to wing margin. Tp straight, oblique, longer than apical part of m3+4 (about 10:7). No anal vein. Halter yellow. Squama yellow, with yellow cilia.

*Abdomen:* segments 1-4 yellow, dorsally and towards apices more or less browned, partly with a metallic green hue; remaining segments shining dark metallic green. Hairs and bristles on terga black. Segments 4 and 5 ventrally with curved black bristles. Segment 7 short, bent back under segment 6, and forming a short stalk to the hypopygium. Hypopygium small, blackish brown, with yellow appendages. Cercus ? (probably broken off).

Remarks: Belongs to the *pallidicornis*-group (Bickel, 1994: 307) (yellow antenna with very long arista; coxae and legs yellow, poorly bristled, with a curved pv near apex of fore tibia; abdomen largely yellow). It is related to the species *pallidicornis* (Grimshaw, 1901), mentioned from the Seychelles by Lamb, with some hesitation; it agrees very well with the description given by Becker of some of the characters (p.e. pleurae of thorax not yellow, but dark metallic green).

### ***Austrosciapus* Bickel, 1994**

#### ***Austrosciapus* sp. S41**

Material examined: 1♀, Malaise trap Aldabra Picard 27/4/1974-21/1/1976 (Collected by R. Prys-Jones). Mixed scrub (S41).

*Body length* 3.7mm; *wing length* 3.3mm.

*Head.* Frons shining dark metallic green; face metallic green with a white dusting, nearly parallel-sided, rather narrow (its width beneath antennae less than half the width of an eye, seen from in front, at same level); clypeus about as long as epistoma, and equally wide, adjacent to eye margins. Palpus small, dark brown, with 2 weak black bristles. 2 strong black ocellar bristles; at either side 1 black vertical bristle on frons (much weaker than the ocellar bristles). Antenna dusky brown; 3<sup>rd</sup> segment rather small, rounded triangular, about as long as deep; arista dorsal, short. Lateral and lower postocular cilia white.

*Thorax* shining dark metallic green. 6 dc (most of them broken off); 3 or 4 pairs of short acr. Scutellum with (small) laterals [broken off].

*Legs.* Fore coxa yellow; mid and hind coxae dark brown. Legs yellow; fore and mid tarsi gradually browned from tip of 1<sup>st</sup> segments onward; hind tarsus entirely feebly browned. Fore coxa anteriorly on apical half with 3 strong black bristles. Legs feebly bristled.

*Wing* with extensive brown markings (comparable to fig. 126b on p.367 in Bickel 1994). m1 rises from m1+2 with an angle of less than 90°, and converges towards r4+5 with a pronounced curve, ending above wing tip. Tp nearly straight, longer than apical part of m3+4 (about 7:5).

*Abdomen.* Terga shining dark metallic green.

Remarks: Possibly this female belongs to the genus *Austrosciapus*, as described by Bickel (1994: 231), especially because of the brown wing markings; also other characters (shape of face and antennae; bristling of thorax) fit in with it. This genus is hitherto

unknown from the Seychelles (according to Bickel it is entirely Australian, although two species are found also on various Pacific Islands and New Zealand, “undoubtedly the result of accidental introduction” [Bickel 1994: 231]).

### ***Chrysosoma* Guérin-Ménéville, 1831**

#### ***Chrysosoma snelli* Curran, 1927**

*Chrysosoma leucopogon* (Wiedemann, 1824), auctt.

Material examined: 1♂, edge of marsh and *Calophyllum inophyllum* woodland, North island (0m), 30/7-1/8/2000 (S6)

Remarks: a species with a wide distribution in eastern Africa (Tanzania, Kenya, Madagascar, Seychelles, Aldabra, Rodriguez, Réunion, Mauritius, Maldives); it is also known from the Chagos Archipelago. Until 1980 African specimens of this species were mentioned as *Chrysosoma leucopogon* (Wiedemann, 1824), but in Dyte & Smith, 1980: 445 all African specimens are quoted as *Chrysosoma snelli* Curran, 1927.

### ***Ethiosciapus* Bickel, 1994**

#### ***Ethiosciapus bilobatus* (Lamb, 1922)**

*Psilopus bilobatus* Lamb, 1922: 372; type species of *Ethiosciapus* Bickel.

Material examined: 1♂, Mon Plaisir, Silhouette (550m). 8/7-6/8/2000. Primary moss forest (S1); 1♀, Jardin Marron, Silhouette (390m), 9/8/2000. Palm forest (S2); 3♂♂, 21♀♀, Jardin Marron, Silhouette (390m), 1/10/2000-30/9/2001, Palm forest (S15); 1♂, 2♀♀, above Dauban mausoleum, La Passe, Silhouette (20m). Malaise trap 1-4/7/2000, open area with herbaceous cover dominated by *Asystasia gangetica* and *Pueraria phaesaloides* (S23); 5♂, 2♀♀, *Hevea brasiliensis* plantation, Jardin Marron, Silhouette (350m). 7-10/7/2000 (S29).

Male: *Body length:* about 5.0mm; *wing length:* 4.9mm.

*Head.* Vertex deeply excavated; ocellar tubercle high, but not reaching level of upper eye margins. Vertex, frons and face shining metallic green, with a coppery hue on clypeus. Epistoma very feebly bulging, broad, its width beneath antennae about 5/6 of the width of an eye, seen from in front, at same level; inner eye margins slightly converging downward. Clypeus narrower and shorter than epistoma, slightly separated from eye margins, feebly bulging, slightly narrowing downwards, and ending in a broadly rounded apex at level of lower eye margins. Palpus small, yellow, with yellow hairs and a pair of black bristles. Rostrum short, pale yellow. A pair of long and strong, black ocellar bristles. 2 short, thin, black postocellars. At either side 1 black postvertical bristle, shorter and much weaker than the ocellars. Frons at either side with 6 rather long, black hairs. Upper and lateral postocular cilia black, uniseriate and short; lower postocular cilia long, hairlike, pluriseriate, yellowish white. Occiput shining metallic green.

*Antenna* dark brown, short. 2<sup>nd</sup> segment dorsally with a rather long, black bristle (longer than 3<sup>rd</sup> antennal segment), ventrally with 2 slightly shorter and weaker black bristles. 3<sup>rd</sup> segment short, triangular, with a blunt tip. Arista dorsal, moderately long (about

1.3mm), thin, black.

*Thorax.* Thorax and scutellum shining dark metallic green, with coppery reflections. 3 pairs of well-developed, long black acr on anterior half of mesoscutum. 2 pairs of strong, black dc on posterior half, preceded by 3 very short and thin bristlets. Scutellum without laterals. Propleura bare.

*Legs.* Fore coxa and trochanter pale yellow (coxa narrowly dark brown at base). Mid and hind coxae and trochanters blackish brown. Femora and tibiae pale yellow, but hind femur dorsally at apex, and hind tibia at base narrowly browned; hind tibia towards its apex darker coloured than fore and mid tibia. Fore and mid tarsi yellow, feebly infuscated on segments 2-5; hind tarsus more brownish yellow, brown on last 2 segments. *Fore leg.* Coxa anteriorly with long, erect, pale yellow hairs (as long as diameter of coxa), and 3 pale yellow bristles on apical 1/3. Femur ventrally with a row of about 11 black bristles (a little longer than greatest depth of femur); posteroventrally a row of slightly shorter, thin, yellow hairs. Tibia about as long as femur; at 3/5 from base a long, black pv; a shorter, black preapical ventral bristle; ventrally the hairs are slightly lengthened. 1<sup>st</sup> segment of tarsus very feebly bent, slightly broadened and flattened, ventrally with a dense row of very short, black bristlets. Length of tibia and tarsal segments (in mm): 1.3:0.9:0.35:0.25:0.15:0.15. *Mid leg.* Coxa anteriorly and exteriorly with *pale yellow* hairs and bristles. Femur ventrally with a row of weak black bristles, the longest of which are shorter than greatest depth of femur; ventrally at base a row of 4 shorter bristles. Tibia: 1 small ad and 1 small pd before middle, and 1 slightly longer ad beyond middle. Length of tibia and tarsal segments (in mm): 1.9:1.35:0.4:0.3:0.15:0.15.

*Hind leg.* Coxa exteriorly with about 6 pale yellow bristles and bristly hairs of unequal length. Femur ventrally with a row of rather weak, bent, black bristles (shorter than greatest depth of femur). Tibia: 1 small ad near base; 2 or 3 small dorsal bristles; some of the dorsal and ventral hairs are somewhat lengthened and bristlelike. 1<sup>st</sup> and 2<sup>nd</sup> tarsal segments ventrally shortly spinulose; 4<sup>th</sup> and 5<sup>th</sup> segments broadened and flattened. Length of tibia and tarsal segments (in mm): 2.5:1.2:0.5:0.3:0.2:0.15.

*Wing* hyaline, slightly browned towards its anterior margin; veins dark brown; costa brownish yellow, with short, black spinules. m1 rises from m1+2 with an angle of about 90°, and converges towards r4+5 with a regular curve, ending above wing tip; m2 faded, but visible on to wing margin. Tp straight, oblique, much longer than apical part of m3+4 (about 2:1, if m3+4 is continued un to wing margin). No anal vein. Halter yellow, with darkened stalk. Squama yellow, apically infuscated, with black cilia.

*Abdomen* shining metallic green, with coppery reflections, terga 2-5 with dull black anterior and narrow dull black posterior borders; tergum 6 with dull black anterior half. Venter dark brown. Sternum 3 bears at either side a rather long, heavy, black thorn, consisting of coagulated hairs. Hairs on terga black. [Hindmarginal bristles on terga broken off]. Rather short black bristles along side margins of terga 4-6. Segment 7 short, blackish brown, bearing black hairs and hairlike bristles, bent back under segment 6, and forming a short stalk to the hypopygium. Hypopygium dark brown, with yellow appendages. Cercus as long as hypopygium, darkened at tip, blade-like, with black bristly hairs, bearing at its base a short, bent branch, with a claw-like tip.

Female: Body length 3.7mm; wing length 4.4mm. Like male, with the following

differences.

*Head.* Frons without long hairs, bearing at either side a long and strong, black vertical bristle.

*Thorax* with 4 dc.

*Legs.* Femora ventrally without rows of bristles. Fore tibia with a long pv, but without preapical ventral bristle. Fore tarsus simple. [Segments 2-5 of hind tarsus missing]. The 3 dorsal bristles on hind tibia longer and stronger than with the male.

*Abdomen.* Dull black bands reduced. Hairs and bristles on terga black, long.

Remarks: As Bickel (1994: 142) already remarks, Lamb did not note the flattening and broadening of the 1<sup>st</sup> segment of the fore tarsus with the pale ventral pile. Both authors fail to mention the conspicuous ‘thorns’ on abdominal sternum 3, though they are weakly represented on Lambs drawing (Plate 27, 3c).

***Ethiosciapus prysjonesi spec. nova* Fig. 5.**

Material examined: Holotype ♂, allotype female, 9♂♂ and 6♀♀ paratypes from Aldabra: Picard, 27/4/1974-21/1/1976 (malaise trap in mixed scrub), collected by R. Prys-Jones (S51: holotype; S38: paratypes).

Etymology: named after its collector R. Prys-Jones.

Male. *Body length:* 3.0-3.2mm; *wing length:* 2.5-2.7mm.

*Head.* Vertex deeply excavated; ocellar tubercle high, but not reaching level of upper eye margins. Vertex, frons and face shining metallic green, with coppery reflections. Epistoma very feebly bulging, broad, its width beneath antennae about equal to the width of an eye, seen from in front, at same level; inner eye margins slightly converging downward. Clypeus narrower than, and about equally long as epistoma, slightly separated from eye margins, feebly bulging, with more or less parallel side margins, and ending in a broadly rounded apex at level of lower eye margins. Palpus small, black, with yellow hairs and a pair of black bristles. Rostrum short, yellow. A pair of long and strong, black ocellar bristles. 2 short, thin, black postocellars. At either side 2 black postvertical bristles, shorter and much weaker than the ocellars. Frons at either side with about 6 rather long, black hairs. Lateral postocular cilia whitish, uniseriate and rather short; lower postocular cilia longer, pluriseriate, white. Occiput shining metallic green.

*Antenna:* basal segments black, 3<sup>rd</sup> segment dark brown, short. 2<sup>nd</sup> segment dorsally and ventrally with rather short, black bristles (hardly as long as 3<sup>rd</sup> antennal segment). 3<sup>rd</sup> segment short, triangular, with a blunt tip. Arista apicodorsal, moderately long (about 1.0mm), thin, black.

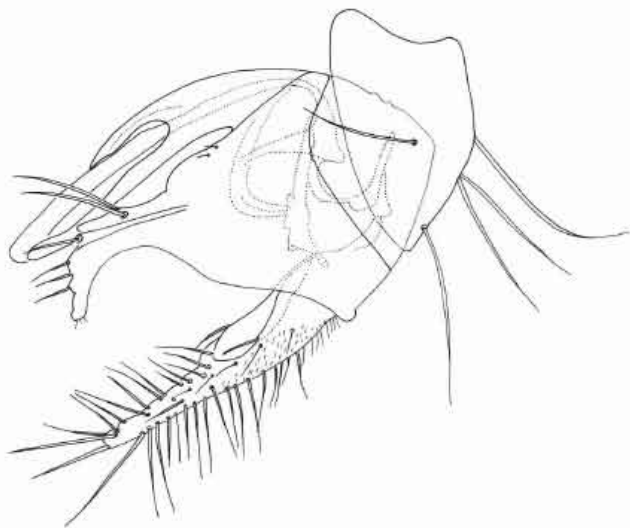
*Thorax.* Thorax and scutellum shining dark *metallic green*, with coppery reflections. 2 or 3 irregular pairs of well-developed, long black acr on anterior half of mesoscutum. 2 pairs of strong, black dc on posterior half, preceded by 3 very short and thin bristlets. Scutellum without laterals. Propleura bare.

*Legs.* All coxae and trochanters dark brown. Femora dark brown. Tibiae yellow to brownish yellow (hind tibia darkest). Fore and mid tarsi yellow, infuscated on segments 2-5; hind tarsus entirely brown. *Fore leg.* Coxa anteriorly with short pale yellow hairs, and 3 rather weak pale yellow bristles on apical 1/3. Femur ventrally and posteroventrally with rows of yellowish white, hairlike bristles (on basal half of femur hardly as long as

greatest depth of femur). Tibia about as long as femur; posteroventrally, on apical half 4 hairlike pale bristles. 1<sup>st</sup> and 2<sup>nd</sup> segments of tarsus not broadened or flattened, but ventrally with a dense cushion of short, pale hairs. Length of tibia and tarsal segments (in mm): 0.8:0.45:0.25:0.15:0.1:0.1. *Mid leg.* Coxa anteriorly and exteriorly with *pale yellow* hairs and bristles. Femur ventrally with a row of weak black bristles, the longest of which are shorter than greatest depth of femur; ventrally at base a row of 4 shorter bristles. Tibia: 1 small pd near base. Length of tibia and tarsal segments (in mm): 1.0:0.8:0.25:0.15:0.1:0.07. *Hind leg.* Coxa exteriorly with 1 long and about 4 short pale hairs. Femur antero- and posteroventrally with rows of hairlike, pale bristles (the longest of which are slightly longer than greatest depth of femur). Tibia: 1 small ad near base; some of the ventral hairs are somewhat lengthened and bristlelike. 1<sup>st</sup> and 2<sup>nd</sup> tarsal segments ventrally shortly spinulose; 3<sup>rd</sup> and 4<sup>th</sup> segments slightly broadened and flattened. Length of tibia and tarsal segments (in mm): 1.4:0.65:0.27:0.15:0.1:0.07.

*Wing* hyaline; veins mostly dark brown; costa brownish yellow, with short, black spinules. m1 rises from m1+2 with an angle of about 90°, and converges towards r4+5 with a pronounced curve, ending above wing tip; m2 faded, but visible on to wing margin. Tp straight, oblique, longer than apical part of m3+4 (about 7:4). No anal vein. Halter yellowish brown. Squama yellow, apically infuscated, with brownish yellow cilia.

*Abdomen* shining dark metallic green, with coppery reflections, without dull black bands. Venter brown, with rather long black hairlike bristles. Hairs and bristles on terga black. Segment 7 short, blackish brown, bearing black hairs and hairlike bristles, bent back under segment 6, and forming a short stalk to the hypopygium. Hypopygium rather small, dark brown, with dark appendages.



Figs. 5. *Ethiosciapus prysjonesi* spec. nova, paratype male, lateral view genital capsule.

Female. *Body length* 2.2-2.5mm; *wing length* 2.25-2.4mm. As male, with the following differences.

*Head.* Frons without long hairs, bearing at either side a long and strong, black vertical bristle.

*Thorax* with 4 dc.

*Legs.* Femora ventrally with only short hairs. Fore tibia without bristles. Fore and hind tarsi simple. Hind tibia bristleless.

*Abdomen.* Hairs and bristles on terga black, long.

Remarks: Most of the characters (especially bristling of thorax and frons, and the ventral cushion of hairs on fore tarsus) are pointing to the genus *Ethiosciapus* Bickel, 1994. This species is not mentioned by Lamb (1922). The female certainly belongs to this species, although it is smaller than the male.

### ***Mascaromyia* Bickel, 1994**

#### ***Mascaromyia amplicaudata* (Lamb, 1922)**

*Psilopus amplicaudatus* Lamb, 1922: 378.

Material examined: 1♂, Jardin Marron, Silhouette (390m), 2-7/7/2000. Palm forest (M2, S3); 4♂♂, 3♀♀, Jardin Marron, Silhouette (390m), 1/10/2000-30/9/2001, palm forest (W6, S16, S19).

Male. *Body length:* about 3.6mm; *wing length:* 3.4mm.

*Head.* Vertex hardly excavated. Vertex and frons blackish brown, with a metallic green hue. Face brownish black, very narrow; *eyes nearly touching each other*. Clypeus small, pale yellow, protruding. Palpus small, pale yellow, *with yellow hairs and a weak dark bristle*. Rostrum rather large, pale yellow. A pair of long and strong, black ocellar bristles. At either side 1 brownish yellow postvertical bristle, shorter and much weaker than the ocellars. Lower postocular cilia rather short, yellowish white. Occiput brownish black with a metallic shine.

*Antenna* pale yellow, short. 2<sup>nd</sup> segment with a circle of short marginal bristlets, dorsally with a longer bristle (about as long as 3<sup>rd</sup> antennal segment), ventrally with a shorter bristle. 3<sup>rd</sup> segment short, blunt-tipped. Arista dorsal, short (about 0.8mm), brownish.

*Thorax.* Thorax yellow; mesoscutum largely, and scutellum brown with a metallic green shine. *4 pairs of dc; no acr*. Scutellum without laterals. A small, black propleural bristle.

*Legs.* Coxae and legs entirely yellow. *Fore leg.* Coxa anteriorly near base with 3 short, black bristles, and some scattered short, dark hairs; towards apex paler hairs, and at apex 3 bent, black bristles. Femur ventrally with a row of short, weak, brownish bristles (the longest of them hardly half as long as greatest depth of femur). Tibia a little longer than femur, slender, without bristles. 1<sup>st</sup> segment of tarsus ventrally on basal half with a dense row of short, black bristlets. Length of tibia and tarsal segments (in mm): 1.4:1.15:0.5:0.35:0.25:0.15. *Mid leg.* Coxa with a brown exterior bristle. Femur ventrally on basal half with a row of 5 dark bristles (slightly longer than greatest depth of femur). Tibia more than 1.5 times as long as femur; 3 ad; 1 very small pd near base; about 6 tiny pv. Length of tibia and tarsal segments (in mm): 2.4:1.3:0.5:0.4:0.2:0.1. *Hind leg.* Coxa

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with a black exterior bristle. Femur anteroventrally with a row of 8 long and strong bristles (the first 3 of which are straight, and pale; the 5 last bristles are black, and bent); ventrally on basal half a row of shorter, thinner, pale bristles. Tibia much longer than femur; 1 ad near base, 3 pd, all very small. Length of tibia and tarsal segments (in mm): 2.75:1.0:0.7:0.45:0.25:0.1.

*Wing* rather narrow, hyaline, with brownish yellow veins; costa with short spinules. m1 rises from m1+2 with an angle of less than 90°, and runs towards tip of wing after a rounded rectangular curve; m2 short, faded away before reaching wing margin. Tp straight, a little longer than apical part of m3+4. No anal vein. Halter yellow. Squama yellow, with brownish cilia.

*Abdomen* yellow, dorsally faintly browned. Hairs and bristles on terga black; longer bristles only on 1<sup>st</sup> tergum. Segment 7 forms a short stalk to the hypopygium. Hypopygium very large, more or less triangular, yellow, with partly black appendages.

Remarks: The specimens found here correspond completely to the description and the figures given by Lamb (1922). The conspicuous bristling on the mid and hind femora are quite characteristic as well as the huge male genitalia.

#### ***Mascaromyia digrediens* spec. nova Fig. 6.**

*Material examined:* Holotype ♂, allotype ♀, 6♂♂ and 4 ♀♀ paratypes from North Island, edge of marsh and *Calophyllum inophyllum* woodland, at 0m. height, 30/7-1/8/2000, leg. Justin Gerlach (S7, S8). 1♂ and 12♀♀ paratypes from D'Arros, mixed secondary woodland, at 0m. height, leg. Justin Gerlach (S31).

Etymology: the Latin participle *digrediens* means 'deviating'; here it points to some deviations from the original description of the genus *Mascaromyia* Bickel, 1994, especially to the presence of small lateral bristlets on the scutellum.

Male. *Body length:* 2.7-3.1mm; *wing length:* 2.1-2.5mm.

*Head.* Vertex excavated; ocellar tubercle high, just reaching level of upper eye margins. Vertex and frons shining metallic green; epistoma metallic green, with a silvery white dusting; clypeus yellow, dorsally with a silvery white dusting. Epistoma not bulging, rather narrow, its width beneath antennae about 4/7 of the width of an eye, seen from in front, at same level; inner eye margins converging downward. Clypeus *short*, less than half as long as epistoma, clearly separated from eye margins, with a rounded apex, surpassing lower eye margins. Palpus small, yellow, with a short, black apical bristle. Rostrum short, pale yellow. A pair of long and strong, black ocellar bristles. 2 tiny, black postocellars. At either side 1 black vertical bristle, nearly as strong as the ocellars. Frons without lateral bristles or hairs. Upper postocular cilia very short, black; lateral and lower postocular cilia short, yellow. Occiput shining dark metallic green.

*Antenna* dark brown (3<sup>rd</sup> segment somewhat paler coloured), short. Dorsal and ventral bristles on 2<sup>nd</sup> segment about equally long (about as long as 3<sup>rd</sup> antennal segment). 3<sup>rd</sup> segment short, triangular, with a rather blunt tip. Arista dorsal, rather short (about 0.5mm), black.

*Thorax.* Thorax and scutellum shining dark *metallic green*, with coppery reflections; bristles black. 5-6 irregular pairs of small and weak acr. 5 pairs of strong, black dc. Laterals on scutellum very short, hairlike. A weak, hairlike propleural bristle.

*Legs.* Fore coxa yellow. Mid and hind coxae brown, yellowish towards apices. Legs yellow; hind femur dorsally at apex usually very feebly infuscated. Fore and mid tarsi gradually feebly browned; hind leg feebly browned from apex of tibia onward. *Fore leg.* Coxa anteriorly with very short, pale yellow hairs, and 3 strong, but not very long, black bristles near apex. Femur ventrally near base with some very short, scattered bristly hairs; 2-4 short preapical pv. Tibia as long as femur; 2 d and 1 pd, all short and weak. Length of tibia and tarsal segments (in mm): 0.75:0.5:0.25:0.2:0.1:0.1. *Mid leg.* Coxa anteriorly and exteriorly with some very short pale hairs and short black bristles; near apex 2 longer, bent, black bristles. Femur near apex with a few weak pv, and a stronger preapical ad. Tibia a little longer than femur: 3 ad, 3 pd, 2 v. Length of tibia and tarsal segments (in mm): 1.0:0.6:0.3:0.2:0.15:0.1. *Hind leg.* Coxa with a long, black exterior bristle. Femur with a preapical ad, and a weaker preapical pd. Tibia longer than femur (about 5:4): 3 ad, 3 d. Length of tibia and tarsal segments (in mm): 1.25:0.45:0.35:0.25:0.15:0.1.

*Wing* hyaline, very slightly browned; veins brown; costa brownish yellow, with short, black spinules. m1 rises from m1+2 with an angle of about 90°, and runs, after a rounded angle of 90°, more or less parallel to r4+5, ending just above wing tip; m2 fades away after a short stub. Tp straight, oblique, a little longer than apical part of m3+4. No anal vein. Halter yellow. Squama yellow, with a narrow black border, and pale cilia.

*Abdomen* shining dark metallic green, with coppery reflections, without dull black bands. Hairs and hindmarginal bristles on terga black. Segment 7 shorter and narrower than segment 6, bent back under segment 6, and forming a short stalk to the hypopygium.

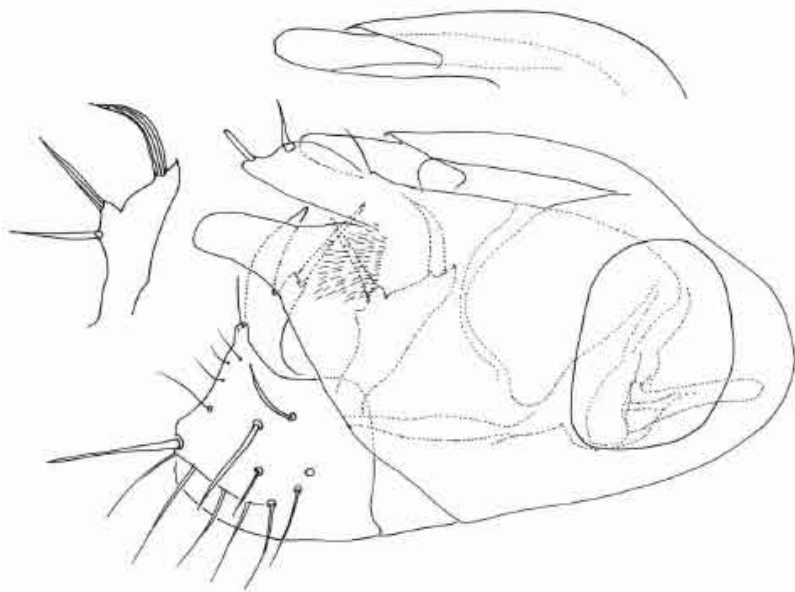


Fig. 6. *Mascaromyia digrediens* spec. nova, paratype male, lateral view genital capsule with detail of hypandrium with tip aedeagus and surstylus.



Hypopygium rather small, dark brown. Cercus short, rounded, brownish yellow, bearing a few short bristles.

Female: As male, with the following differences:

*Body length* 2.8-3.4mm; *wing length* 2.4-2.9mm.

*Head*. Face a little broader than in male. Clypeus larger and broader, nearly as long as epistoma, strongly bulging, dark green, with a silvery white dusting.

*Antenna*. 3<sup>rd</sup> segment a little deeper than long.

*Thorax*. Up to 8-9 pairs of short, weak acr.

*Fore leg*. Coxa on its basal half with a row of 3-5 strong, but rather short bristles; near apex 3 bristles as with the male. Femur ventrally, on slightly more than basal half, with a row of 4 (sometimes 5) strong, black bristles, the longest of which are a little longer than greatest depth of femur.

*Wing*. Venation as in male; in one case m1 makes an angle of less than 90°, and bears there a very short stub-vein.

Remarks: This species is not mentioned by Lamb (1922). It does not clearly fit in with any generic description given by Bickel (1994), but probably it belongs to *Mascaromyia* Bickel (short acr, 5 strong dc; arista dorsal, rather short; narrow face; abdominal segment 7 well-developed, forming a stalk to the hypopygium; wing venation), but deviates from it by some of its characters (small laterals on scutellum present; vertex clearly excavated; face narrow, but eyes not nearly holoptic).

Probably the female belongs to this species, because of its colouring, the same bristling of mesoscutum, and equal wing venation. The strong ventral bristles on fore femur do point to the genus *Mascaromyia* (see Bickel 1994: 100).

### ***Mascaromyia gerlachi* spec. nova Fig. 7.**

Material examined: Holotype ♂, and allotype ♀ from North Island, edge of marsh and *Calophyllum inophyllum* woodland, at 0m. height, 30/7-1/8/2000, leg. Justin Gerlach (holotype S53; paratype, S9). 3♀♀, D'Arros 21/6/03. (0m) Mixed secondary woodland (S32); 1♀, Malaise trap Aldabra Picard 27/4/1974-21/1/1976 (Collected by R. Prys-Jones). Mixed scrub (S35); 6♀♀, Malaise trap Aldabra Picard 27/4/1974-21/1/1976 (Collected by R. Prys-Jones). Mixed scrub (S39).

Etymology: named after its collector Justin Gerlach.

Male.

*Body length*: 2.9mm; *wing length*: 2.6mm.

*Head*. Vertex rather shallowly excavated; ocellar tubercle high, reaching level of upper eye margins. Vertex and frons shining metallic green, with coppery reflections; face shining metallic green. Epistoma very feebly bulging, rather narrow, its width beneath antennae about 2/3 of the width of an eye, seen from in front, at same level; inner eye margins feebly converging downward. Clypeus shorter than epistoma, clearly separated from eye margins, with a rounded apex, surpassing lower eye margins. Palpus small, yellowish, transparent, with 2 thin marginal bristles. Rostrum short, pale yellow. A pair of long and strong, black ocellar bristles. 2 tiny, black postocellars. At either side 1 black vertical bristle, nearly as strong as the ocellars, and 1 postvertical. Frons without lateral bristles or hairs. Upper postocular cilia uniseriate, short, black; lateral and lower

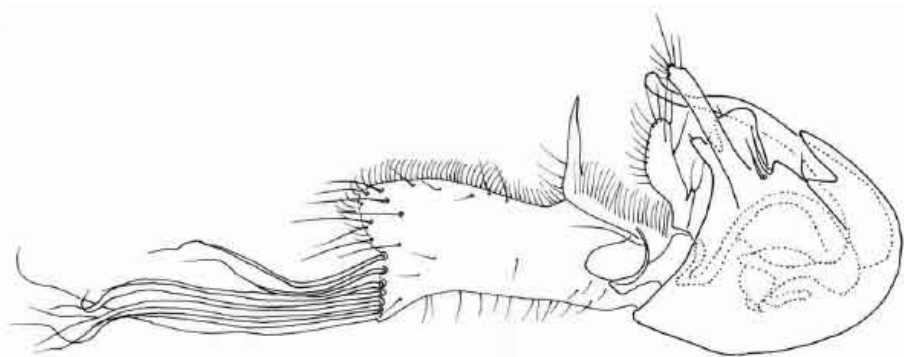


Fig. 7. *Mascaromyia gerlachi* spec. nova, paratype male, lateral view of genital capsule.

*Antenna* short; basal segments black, 3<sup>rd</sup> segment dusky brown. Marginal bristles on 2<sup>nd</sup> segment very short; only the ventral bristles somewhat longer (shorter than 3<sup>rd</sup> antennal segment). 3<sup>rd</sup> segment short, about as long as deep, triangular, with a rather blunt tip. Arista dorso-apical, rather short (about 0.65mm), black.

*Thorax*. Thorax and scutellum shining dark metallic green, with coppery reflections; bristles black. 5 irregular pairs of small and weak acr. 4 pairs of rather strong, black dc. Scutellum without laterals. Propleura bare.

*Legs* long and slender. Fore coxa yellow. Mid and hind coxae brownish black, apically narrowly yellow. Legs yellow; 5<sup>th</sup> segment of fore tarsus contrasting brownish black; last three segments of mid and hind tarsi feebly browned. *Fore leg*. Coxa anteriorly with short, pale yellow bristly hairs, and 4-5 long, but thin, yellow bristles. Femur without bristles. Tibia much longer than femur (about 3:2), without bristles. 1<sup>st</sup> tarsal segment ventrally with a fringe of very short bristlets. Length of tibia and tarsal segments (in mm): 1.2:0.7:0.25:0.15:0.1:0.08. *Mid leg*. Coxa anteriorly and exteriorly with some yellow hairs and bristles. Femur with only a short preapical pd. Tibia longer than femur (about 4:3): 2 ad. Length of tibia and tarsal segments (in mm): 1.15:0.9:0.3:0.25:0.15:0.1. *Hind leg*. Coxa with a thin, yellow exterior bristle. Femur with only a weak preapical pd. Tibia longer than femur (about 7:5): a small ad; some of the hairs are feebly lengthened and bristlelike. Length of tibia and tarsal segments (in mm): 1.5:0.65:0.35:0.25:0.15:0.1.

*Wing* hyaline; veins dark brown; costa brown, with short, black spinules. m1 rises from m1+2 with an angle of about 90°, and converges towards r4+5 with a regular curve, ending well above wing tip; m2 fading, but visible un to wing margin. Tp straight, oblique, about 1.5 times as long as apical part of m3+4. No anal vein. Halter yellow. Squama yellow, with pale cilia.

*Abdomen* shining dark metallic green, with coppery reflections, with narrow dull black bands at anteriormargins of terga 3, 4 and 5. Hairs and hindmarginal bristles on terga black. Segment 7 shorter and narrower than segment 6, bent back under segment 6, and forming a short stalk to the hypopygium. Hypopygium more or less triangular, dark

brown, rather small, but with long and broad yellow cerci, that end in a long tuft of coagulated yellow hairs.

Description of female. As male, with the following differences:

*Body length* 2.9mm; *wing length* 2.6mm.

*Head.* Face a little broader than in male. Clypeus about as long as epistoma, rather strongly bulging.

*Antenna.* 3<sup>rd</sup> segment dark brown.

*Thorax.* 6-7 pairs of short, weak acr.

*Fore leg.* Coxa with 3 long yellow bristles. Femur and tibia without bristles, as in male. 5<sup>th</sup> tarsal segment coloured as with the male. *Mid leg.* Tibia with 2 ad, and 2 very short pd.

*Abdomen* without dull black bands.

Remarks: Not mentioned by Lamb (1922). Probably belongs to *Mascaromyia*, especially because of the bristling of the mesoscutum and the scutellum.

### ***Mascaromyia grandicaudata* (Lamb, 1922)**

*Psilopus grandicaudatus* Lamb, 1922: 378

Material examined: 7♂♂, 12♀♀, Jardin Marron, Silhouette (390m), 1/10/2000-30/9/2001, palm forest (S17, S20).

Male: *Body length:* 3.3-3.7mm; *wing length:* 2.6-2.7mm.

*Head.* Vertex shallowly excavated. Vertex and frons shining dark metallic green. Face greenish black, with a brownish yellow dusting, very narrow; eyes nearly touching each other. Clypeus small, heavily dusted pale yellowish grey, hardly protruding. Palpus small, yellow, with yellow hairs and a weak, black apical bristle. Rostrum rather large, pale yellow. [Ocellar bristles broken off in all specimens]. At either side 1 rather weak postvertical bristle. Lower postocular cilia very short, pale. Occiput greenish black, with a metallic shine.

*Antenna* yellow, short. 2<sup>nd</sup> segment with a circle of short marginal bristlets, the longest of which are a little shorter than 3<sup>rd</sup> antennal segment. 3<sup>rd</sup> segment short, rounded triangular, blunt-tipped, about as long as deep. Arista dorsal, short (about 0.6mm), brownish.

*Thorax.* Mesoscutum and scutellum entirely shining dark metallic green, with coppery and violet reflections; pleurae yellow; postnotum dark brown. 4 pairs of dc; no acr. Scutellum without laterals. A very small, hairlike, black propleural bristle.

*Legs.* Coxae and legs yellow, but hind leg distinctly more brownish; mid leg brownish from about middle of tibia; fore tarsus very feebly browned. *Fore leg.* Coxa anteriorly with very short, scattered pale hairs; at apex 3 rather weak, bent, black bristles. Femur antero- and posteroventrally with rows of hairlike bristles, longest on basal half of femur (there hardly longer than greatest depth of femur). Tibia about as long as femur, without bristles. 1<sup>st</sup> segment of tarsus ventrally on basal half dense rows of very short, black hairs. Length of tibia and tarsal segments (in mm): 1.0:0.75:0.4:0.3:0.2:0.1.

*Mid leg.* Coxa with 2 weak, black exterior bristles. Femur without bristles; ventral (especially anteroventral) hairs slightly lengthened. Tibia much longer than femur (about 8:5); 1 ad near base, and 1-2 very small ad on apical half; 3 very small pd; some tiny pv. Length of tibia and tarsal segments (in mm): 1.6:1.0:0.4:0.3:0.2:0.1. *Hind leg.* Coxa

with a black exterior bristle. Femur on basal 2/3 anteroventrally with a row of about 7 strong, but rather short bristles (the longest of them are a little longer than greatest depth of femur). Tibia much longer than femur (about 3:2); 1 short ad near base; 4-5 very short d. Length of tibia and tarsal segments (in mm): 1.9:0.55:0.45:0.3:0.2:0.1.

*Wing* narrow, without axillary lobe, hyaline, very feebly browned, with dark brown veins; costa with short spinules. m1 rises from m1+2 with an angle of about 90°, and runs towards tip of wing after a rounded rectangular curve; m2 short, faded away before reaching wing margin. Tp straight, about as long as apical part of m3+4. No anal vein. Halter yellow. Squama yellow, with a narrow black margin, and brown cilia.

*Abdomen.* Terga brown to dark brown; 1<sup>st</sup> tergum partly yellow; 2<sup>nd</sup> tergum with a rather broad basal yellow border; sterna brownish yellow. Hairs and bristles on terga very short, black; longer bristles only on 1<sup>st</sup> tergum. Segment 7 forms a stalk to the hypopygium. Hypopygium very large, more or less rounded triangular, yellow on ventral half, dark brown on dorsal half; cerci small, brownish yellow, apically with a tuft of pale, wrinkled hairs (see Lamb, 1922, pl. 28, fig. 7).

Remarks: Answers well to the description and figures given by Lamb (1922). The only feature that does not fit in well is his remark 'The pleura is rather blackened'.

### ***Mascaromyia pollicifera* (Lamb, 1922)**

*Psilopus pollicifer* Lamb, 1922: 375.

Material examined: 2♂♂, Jardin Marron, Silhouette (390m), 1/10/2000-30/9/2001, palm forest (S18).

Male: *Body length:* 4.4mm (only specimen A measured); *wing length:* 3.0-3.2mm.

*Head.* Vertex hardly excavated, rather narrow. Vertex and frons dark metallic green. *Eyes touching each other over a long distance*, leaving from face two yellowish brown triangles. Palpus small, brownish yellow, *with a black apical bristle*. Rostrum pale yellow. A pair of long, black ocellar bristles. At either side 1 short and weak vertical bristle, and a slightly longer, weak, black postvertical bristle. Lower postocular cilia short, whitish. Occiput black with a green metallic shine.

*Antenna* brownish yellow, short. 2<sup>nd</sup> segment with a circle of short marginal bristles, the longest of which are hardly as long as 3<sup>rd</sup> antennal segment. 3<sup>rd</sup> segment short, with rounded tip, about as long as deep. Arista dorsal, rather short (about 0.9mm), black.

*Thorax.* Mesoscutum and scutellum shining dark metallic green; pleurae brownish black, partly with a metallic green shine (in specimen B whole thorax and scutellum brownish yellow, dorsally with a metallic gloss). *4 pairs of dc; no acr.* Laterals on scutellum minute, hairlike. No propleural bristle.

*Legs.* Coxae and legs pale yellow; 1<sup>st</sup> segment of fore tarsus feebly browned towards its tip (in specimen A), and segments 2-4 nearly white. *Fore leg.* Coxa anteriorly with pale hairs and bristles (the longest of which are a little longer than diameter of coxa; at apex a long, strong, pale bristle, that is bent at tip. Femur spindle-shaped (thick at base, thin and very slender towards its tip), without bristles. Tibia longer than femur, slender, without bristles. Tarsus very slender and thin; 1<sup>st</sup> segment very long, ventrally on apical 2/5 with a row of about 7 erect, thin bristles; 4<sup>th</sup> segment apically lengthened into a pointed lobe, that reaches to halfway the somewhat broadened 5<sup>th</sup> segment. Length of

tibia and tarsal segments (in mm): 1.0:1.3:0.25:0.25:0.13:0.07. *Mid leg.* Coxa with 2 pale exterior bristles; at apex a dense brush of short, pale hairs. Femur without bristles. Tibia slender, nearly twice as long as femur (about 9:5); 1 ad near base. Length of tibia and tarsal segments (in mm): 1.8:1.3:0.35:0.3:0.15:0.1. *Hind leg.* Coxa with a long, thin, pale exterior bristle. Femur without bristles, apart from a small preapical av; at tip a short posteroventral lobe (not clearly visible in specimen B). Tibia much longer than femur (about 11:7); some of the hairs in the dorsal row slightly lengthened and bristlelike. Length of tibia and tarsal segments (in mm): 2.2:0.95:0.5:0.35:0.2:0.1.

*Wing* rather narrow, feebly browned (hyaline in specimen B), with brownish yellow veins; costa with short spinules. m1 rises from m1+2 with an angle of about 90°, and runs towards tip of wing after a rounded rectangular curve; m2 short, faded away before reaching wing margin. Tp straight, longer than apical part of m3+4 (about 4:3). No anal vein. Halter yellow. Squama yellow, blackened at apex, with brownish yellow cilia.

*Abdomen.* Tergum 1 brown; terga 2-4 yellow, with a brown dorsal band, and brown hind margins; terga 5 and 6 brown; sterna yellow (in specimen B the abdomen is entirely brownish yellow). Hairs and bristles on terga short, black; longer bristles only on 1<sup>st</sup> tergum. Segment 7 shorter than 6; forming a short stalk to the hypopygium. Hypopygium relatively small, brownish black, with small yellow cerci (Lamb, 1922, pl. 27, fig. 5e).

Remarks: Clearly this is the species described by Lamb as *Psilopus pollicifer*. His description of the 5<sup>th</sup> tarsal segment of fore leg is not completely correct probably due to a misinterpretation of this small structure: the 5<sup>th</sup> tarsomere does not carry a thumb-like structure, but the 4<sup>th</sup> tarsomere is apically lengthened into a pointed lobe, that reaches to halfway the somewhat broadened 5<sup>th</sup> tarsomere. The colour of the abdomen he describes as 'blackish with a suspicion of shininess (in side view) here and there; pale on sides and venter except just at the tip'; so there seems to be some variation in colouring.

### ***Mascaromyia* sp. S21**

Material examined: 26♀♀, Jardin Marron, Silhouette (390m), 1/10/2000-30/9/2001. Palm forest (S21)

This also could be the female of the species described here as *M. amplicaudata* (Lamb), mainly on the base of its colouring, but the fact that the 1<sup>st</sup> abdominal tergum is entirely yellow, the yellow colour of the bristles on fore coxa, and the slightly smaller size seem to point to a different species. Remarkable is the amount of 26 specimens, whereas there seems to be no corresponding male in this sample.

### ***Mascaromyia* S40**

Material examined: 3♀♀, Malaise trap Aldabra Picard 27/4/1974-21/1/1976 (Collected by R. Prys-Jones). Mixed scrub (S 40).

Female: *Body length* 2.8-3.9mm; *wing length* 2.6-3.3mm.

*Head.* Frons and epistoma dusky metallic green, with a white dusting; clypeus yellow, with a white dusting. Palpi yellow, with yellow hairs and bristles. 2 strong black ocellar bristles; at either side 1 strong black vertical bristle on frons. Antenna yellowish white, short; 3<sup>rd</sup> segment small, rounded triangular, about as long as deep; arista dorsal (near to tip of 3<sup>rd</sup> antennal segment). Lateral and lower postocular cilia yellow.

*Thorax entirely yellow; only scutellum contrasting shining dark metallic green.* 4 dc (in the largest specimen a row of 4 and a row of 5 dc); no acr (but in the largest specimen a few very small acr on anteriormost mesoscutum). Scutellum without laterals.

*Legs slender, feebly bristled, entirely yellow.* Fore coxa anteriorly with yellow hairs, and 3 strong yellow bristles.

*Wing hyaline.* m1 rises from m1+2 with an angle of about 90°, and converges towards r4+5 with a regular curve, ending above wing apex. Tp straight, longer than apical part of m3+4 (about 7:4).

*Abdomen yellow; only anterior margin of 4<sup>th</sup> tergum brown.* Rows of hindmarginal bristles on terga well developed, black.

Remarks: Agreeing with all characters of *Mascaromyia*, as given by Bickel (1994). By its remarkable colouring it differs from all hitherto known species.

### **Sciapodinae indet.**

One species was found that could not be identified to genus level.

1♀: North island (0m), 29/7/2000 (S5); 1♀: above Dauban mausoleum, La Passe, Silhouette (20m). Malaise trap 1-4/7/2000. Open area with herbaceous cover dominated by *Asystasia gangetica* and *Poueraria phaesaloides* (S24).

Entirely shining dark metallic green; basal segments of antenna black; 3<sup>rd</sup> antennal segment black, longly triangular, about 3 times as long as deep; arista apical, rather long. Frons with at either side a black vertical bristle. Mesoscutum with 3 strong black acr, and 2 strong black dc, preceded by 3 short and weak bristles. Legs yellow; coxae dark, but fore coxa yellow with black base; fore coxa with 3 pale bristles at apex. Fore femur ventrally with long pale setae; fore tibia with 3 long black d, and 1 long black v.

## **Subfamily Dolichopodinae**

### ***Hercostomus* Loew, 1857**

#### ***Hercostomus* sp. S48**

Material examined: 1♀, Malaise trap Aldabra Picard 27/4/1974-21/1/1976 (Collected by R. Prys-Jones). Mixed scrub (S48).

Female: *Body length* 2.6mm; *wing length* 2.5mm.

*Head.* Frons shining dark metallic green, with a brownish hue; face broad, dark metallic green, with a white dusting; clypeus protruding. Palpi yellow, with short, black bristly hairs. Antenna yellow; 3<sup>rd</sup> segment a little longer than deep, with rounded ventral margin, and an upwards shifted blunt apex; 1<sup>st</sup> segment with a few dorsal black hairs; arista dorsal (inserted about middle of 3<sup>rd</sup> antennal segment). Postocular cilia black.

*Thorax* dorsally dark metallic green, feebly shining, with a brownish yellow hue laterally, especially so on alar calli; pleurae brownish yellow, partly with a greenish metallic shine. Bristles black; 5 dc; acr biseriata; 1 propleural bristle. No hairs present in front of posterior spiracle (*Hercostomus* s.l.)

*Legs.* Coxae and legs yellow; mid coxa more brownish yellow. Fore coxa with black



hairs, and a row of about 6 weak black bristles near apex; fore tibia: 1 d, 1 pd, and a short anterodorsal serration on apical half. Mid femur with an anterior preapical; mid tibia: 3 ad, 1 pd. Hind femur with a strong anterior preapical; hind tibia: 3 ad, 3 pd; a preapical d; 2 small and 1 longer v; 1<sup>st</sup> segment of hind tarsus shorter than 2<sup>nd</sup> segment (about 5:7).

*Wing* hyaline. m1+2 parallel to r4+5, ending at wing apex. Tp straight, shorter than apical part of m3+4 (about 4:7).

*Abdomen* dark metallic green, feebly shining.

Remarks: Hitherto no species of *Hercostomus* or *Gymnopternus* were mentioned from Seychelles.

### ***Lichtwardtia* Enderlein, 1912**

***Lichtwardtia aldabrensis* spec. nova** Figs. 8-9.

Material examined: Holotype ♂ and 2 ♂♂ paratypes from Aldabra: Picard, 27/4/1974-21/1/1976 (malaise trap in mixed scrub), collected by R. Prys-Jones (holotype S54; paratypes S42).

Etymology: named after Aldabra, the isle where this species has been found.

Male. *Body length:* 2.3-2.8mm; *wing length:* 2.4-2.6mm.

*Head.* Vertex and frons shining dark metallic green. Face nearly parallel-sided, covered by a silvery-white dusting. Palpus small, yellow, with short, black bristlets. Rostrum small, yellow. 2 diverging, strong, black ocellar bristles; 2 converging, black vertical bristles, nearly as strong as the ocellars; 2 much shorter, black postvertical bristles, in row with the postoculars. Postocular cilia uniseriate, yellow.

*Antenna* yellow; 3<sup>rd</sup> segment feebly gradually infuscated on its apical half. 1<sup>st</sup> segment dorsally with some short black bristlets. 2<sup>nd</sup> segment with a circle of short marginal bristlets. 3<sup>rd</sup> segment rather large, about 1.5 times as long as deep, with an upward shifted blunt apex. Arista dorsal, inserted near middle of 3<sup>rd</sup> antennal segment, very shortly pubescent.

*Thorax* and scutellum shining dark metallic green. Bristles black; 5 dc; acr biseriate. Scutellum with 2 strong black marginals. A strong black propleural bristle.

*Legs.* Mid and hind coxae brown, yellowish at apices; fore coxa and legs yellow. Mid and hind tarsi browned from tips of 1<sup>st</sup> segments onward. *Fore leg.* Coxa anteriorly with short, black bristly hairs, at apex a row of about 6 rather short, black bristles. Femur without bristles, apart from a very short and weak preapical pv. Tibia about as long as femur; 1 ad and 1 posterior bristle before middle, both about 1.5 times as long as diameter of tibia; a short dorsal bristle about middle. Length of tibia and tarsal segments (in mm): 0.65:0.35:0.15:0.125:0.1:0.1. *Mid leg.* Coxa anteriorly and exteriorly with short black bristly hairs; apically some longer bristles; a black exterior bristle. Femur without bristles. Tibia a little shorter than femur; 2 ad; 1 pd, 1 av, all rather strong; a circlet of 5 rather strong apical bristles. Length of tibia and tarsal segments (in mm): 1.0:0.5:0.25:0.2:0.15:0.1. *Hind leg.* Coxa with a black exterior bristle. Femur with a preapical ad. Tibia about as long as femur; 3 ad, 3 pd; 2-3 very weak and short v. 1<sup>st</sup> tarsal segment a little shorter than 2<sup>nd</sup> segment, bearing 1 dorsal bristle; last tarsal segments not broadened.



Length of tibia and tarsal segments (in mm): 1.15:0.45:0.5:0.25:0.15:0.1.

*Wing* hyaline. Apical part of m1+2 twice broken, as is usual in the genus; the stubs of m1 and of m2 about as long as the connecting vein. Apical part of m3+4 a little longer than tp (about 6:5). Halter yellow. Squama yellow, with black cilia.

*Abdomen* shining dark metallic green; sterna yellowish, partly brown. Hairs and bristles on terga black. Hypopygium dark brown; cercus ovaloid, pale yellow, with narrowly browned margin, bearing long black bristly hairs.

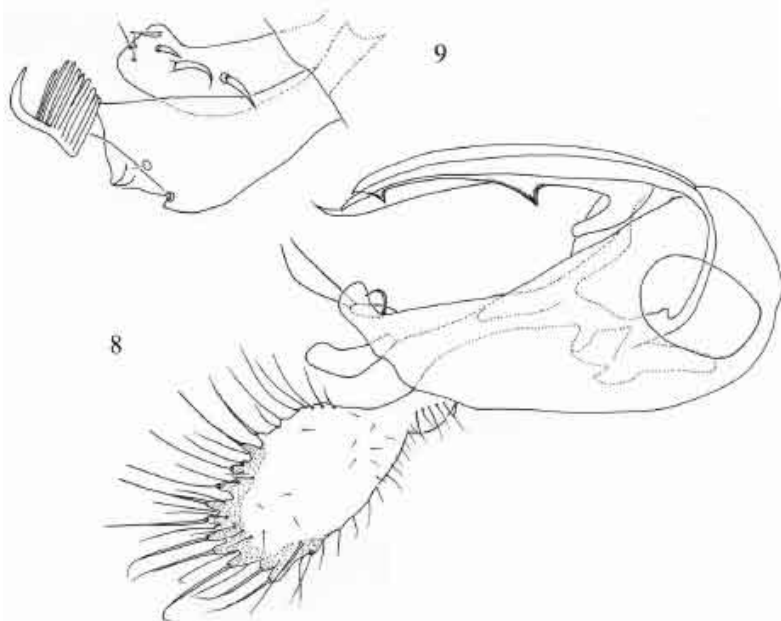
Remarks: The genus *Lichtwardtia* hitherto was not known from the Seychelles. This species has much in common with *Lichtwardtia fractinervis* (Parent, 1929), known from a large area in Africa (Benin, Ghana, Nigeria, Congo, Uganda, Angola, Namibia, Malawi, Ivory Coast, Gabon, Botswana; see Grichanov (2004): 61), but has different male genitalia.

### ***Tachytrechus* Haliday, 1851**

#### ***Tachytrechus tessellatus* (Macquart, 1842)**

*Tachytrechus seychellensis* Lamb 1922: 389.

1♂ (without abdomen), 3♀♀, above Dauban mausoleum, La Passe, Silhouette (20m). Malaise trap 1-4/7/2000. Open area with herbaceous cover dominated by *Asystasia gangetica* and *Poueraria phaesaloides* (S25).



Figs. 8-9. *Lichtwardtia aldabrensis* spec. nova, paratype male, 8. lateral view of genital capsule; 9. Detail of surstylus.

Answers completely to the description given by Lamb (1922) of *T. seychellensis*. This morphospecies has a very wide distribution and is very common throughout the old world tropics: from the West coast of Africa (Nigeria, Senegal), Egypt, Ethiopia, Malawi, Tanzania, Madagascar, Sokotra, Seychelles, Mauritius, India, Southeast Asia (Singapore, Indonesia), Taiwan, Philippines to New Caledonia.

### Subfamily Medeterinae

#### *Medetera* Fischer von Waldheim

*Medetera pachyneura* spec. nova Figs. 10-12.

Material examined: Holotype ♂, allotype ♀, 4♂♂ and 13♀♀ paratypes from Aldabra: Picard, 27/4/1974-21/1/1976 (malaise trap in mixed scrub), collected by R. Prys-Jones (Holotype: S55; paratypes: S43, S44).

Etymology: *pachyneura* is the feminine form of *pachyneurus*, ‘with thickened veins’ (from Greek *pachýs*, ‘thick’, and *neûron*, ‘vein’), alluding to the thickened vein m3+4.

Male. Body length: 1.5-1.7mm; wing length: 1.35-1.5mm.

Head. Vertex, frons and face dark metallic green, moderately shining. Face nearly parallel-sided. Palpus small, blackish, with short, white bristlets. Rostrum brown to dark brown, with short, yellow bristlelike hairs. 2 diverging, strong, black ocellar bristles; 2 black vertical bristles, a little shorter and weaker than ocellars. Postocular cilia yellow.

Antenna yellow. 3<sup>rd</sup> segment small, rounded, about as long as deep. Arista dorso-apical.

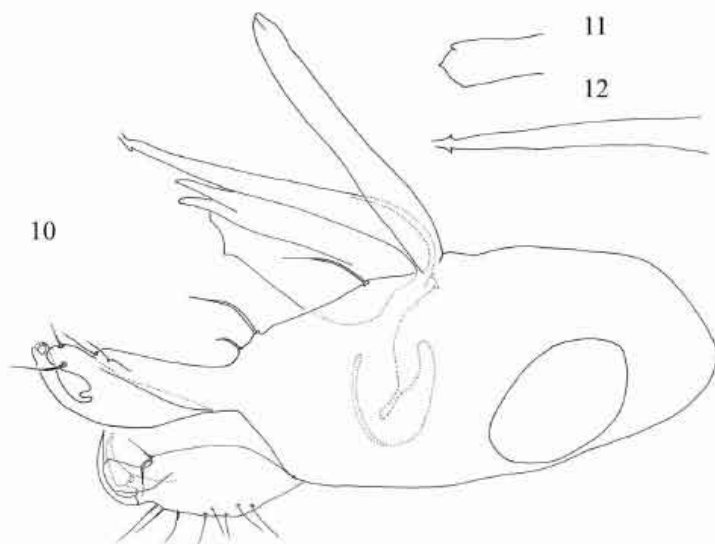


Fig. 10-12. *Medetera pachyneura* sp. nova paratype male, 10. lateral view of genital capsule; 11. tip of hypandrium; 11. tip of aedeagus.

*Thorax* and scutellum shining dark metallic green. Bristles yellowish; 2 long dc, preceded by about 5 small bristlelets; acr biseriate. Lateral bristles of scutellum much shorter than the marginal bristles (about 1/3). 1 propleural bristle.

*Legs.* Coxae and legs yellow; coxae feebly browned towards their bases. 5<sup>th</sup> segments of all tarsi browned. *Fore leg.* Coxa anteriorly with short, pale bristly hairs. Femur posteroventrally with a row of short pale bristles. Tibia about as long as femur, without bristles, apart from 2 very small apical bristlelets. Length of tibia and tarsal segments (in mm): 0.4:0.18:0.12:0.09:0.05:0.05. *Mid leg.* Femur anteroventrally with a row of very short pale bristlelets. Tibia about as long as femur; 1 ad and 1 pd, near base, both rather short. Length of tibia and tarsal segments (in mm): 0.55:0.25:0.15:0.1:0.05:0.05. *Hind leg.* Femur anteroventrally with a row of short bristles (the longest of them shorter than greatest depth of femur). Tibia a little longer than femur; no real bristles. Length of tibia and tarsal segments (in mm): 0.65:0.15:0.2:0.15:0.05:0.05.

*Wing* hyaline. Apical part of m1+2 very feebly arched, nearly straight; distance between tips of r4+5 and m1+2 about half as great as the greatest distance between these veins. Apical part of m3+4 about 1.75 times as long as tp; m3+4 from base to tp clearly thickened. Halter yellow. Squama yellow, with yellow cilia.

*Abdomen* shining dark metallic green, ventrally partly brownish. Hypopygium dark brown to black; cercus yellow.

Description of female. As male; vein m3+4 not thickened.

Remarks: Only two species of *Medetera* (?*M. grisea* De Meijere, 1916 and an undetermined species) are mentioned by Lamb (1922) from Seychelles. The above described species differs clearly from them in its yellow antennae, and especially by the thickened vein m3+4.

## Subfamily Sympycninae

### *Chaetogonopteron* de Meijere, 1913

*Chaetogonopteron marronense* spec. nova. Figs. 13-14.

Etymology: named after the place where it was been found: Jardin Marron, Silhouette.

Material examined: Holotype ♂, allotype ♀, 3♂♂ and 1♀ paratype, from Jardin Marron, Silhouette (390m), 1/10/2000-30/9/2001, leg. Justin Gerlach (Holotype S56; paratypes: S12).

Male. *Body length:* 1.65-1.8mm; *wing length:* 1.5mm.

*Head.* Vertex and frons broad, shining metallic green. Face rather broad, narrowing downward, below about as wide as depth of 3<sup>rd</sup> antennal segment, dark brown, with a metallic green gloss. Eyes pubescent (the pubescence is longest anteriorly). Palpus small, yellow, apically browned, with short hairs and a short apical bristlelet. Rostrum small, yellow. Ocellar and vertical bristles broken off in all specimens; 2 black postvertical bristles. 2 tiny postocellars. Postocular cilia uniseriate, dark.

*Antenna* relatively large, brownish yellow to yellowish brown. 1<sup>st</sup> segment bare. 2<sup>nd</sup> segment with a circle of rather short marginal bristlelets. 3<sup>rd</sup> segment longly triangular

with a blunt apex, nearly 1.5 times as long as deep, shortly pubescent. Arista dorsal, inserted near base of 3<sup>rd</sup> antennal segment [broken off in all specimens].

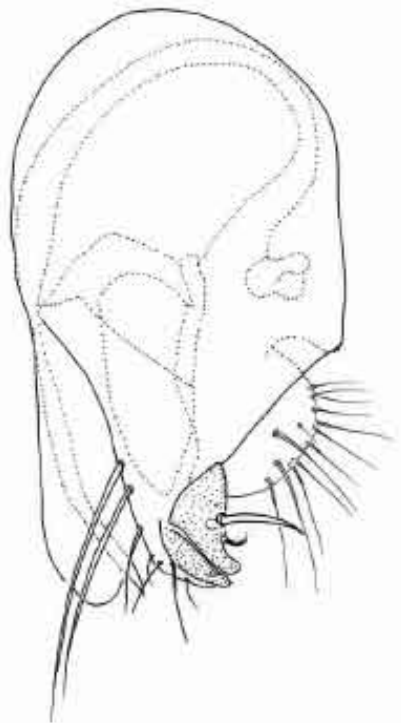
*Thorax* dorsally brownish yellow, with a dark metallic green gloss, that becomes more intensive backwards; scutellum yellow of brownish yellow, dorsally with a dark metallic green gloss. Pleurae yellow. 5 dc [broken off in all specimens]; acr uniseriate. [Marginal bristles of scutellum broken off in all specimens]. No propleural bristle.

*Legs.* Coxae and legs yellow. Mid and (especially) hind tarsi feebly infuscated. *Fore leg.* Coxa anteriorly with scattered black hairs, and a row of short black bristles. Femur without bristles. Tibia shorter than femur (about 11:9), without bristles. Length of tibia and tarsal segments (in mm): 0.45:0.3:0.15:0.12:0.1:0.07. *Mid leg.* Coxa with a black exterior bristle. Femur without bristles; anteroventral hairs near apex slightly lengthened. Tibia a little shorter than femur; 2 weak ad. Length of tibia and tarsal segments (in mm): 0.7:0.35:0.17:0.13:0.1:0.1. *Hind leg.* Coxa with a black exterior bristle. Femur without bristles; some of the av and pv hairs before apex of femur slightly lengthened. Tibia a little longer than femur; 1 ad, 2 d, 1 v, all weak. 1<sup>st</sup> tarsal segment much shorter than 2<sup>nd</sup> segment, slightly thickened; ventrally bearing long, bent hairs, including 2 very long, thin hairs near base (longer than 1<sup>st</sup> tarsal segment). Length of tibia and tarsal segments (in mm): 0.9:0.18:0.25:0.17:0.15:0.1.

13



14



Figs. 13-14. *Chaetogonopteron marronense* spec. nova., paratype male, 13. ventral view of genital capsule; 14. lateral view of genital capsule.

*Wing* hyaline, with dark brown veins. Apical part of m1+2 parallel to r4+5, but distinctly diverging from it on apical half, ending just below wing tip; wing boss near to tp. Apical part of m3+4 a little more than 1.5 times as long as tp. Halter yellow. Squama yellow, with browned margin, and black cilia.

*Abdomen.* Terga brown, feebly shining; sides of 2<sup>nd</sup> tergum broadly yellow; incisures between terga yellow; venter yellow. Hairs and bristles on terga very short, dark. Hypopygium small, brown, partly dark brown; cercus very small, yellow.

Description of female. *Body length* 1.8-2.1mm; *wing length* 1.6-1.7mm. As male, with the following differences:

*Head.* Face below wider than depth of 3<sup>rd</sup> antennal segment.

*Fore leg.* Hairs and bristles on fore coxa shorter than with the male *Hind leg.* 1<sup>st</sup> tarsal segment without long hairs, shorter than 2<sup>nd</sup> segment (about 3:5).

*Abdomen.* Oviscapt small, yellow, with 8 very short, black acanthae.

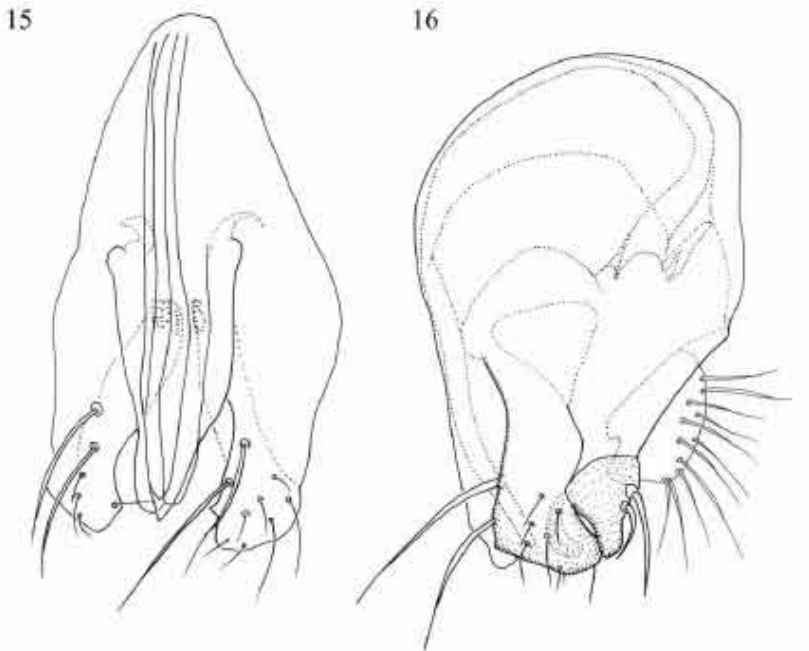
Remarks: see under the next species.

***Chaetogonopteron seychellense* spec. nova.** Figs. 15-16.

Etymology: named after the Seychelles, the isles where this species has been found.

Material examined: Holotype ♂, allotype ♀, and 7♀♀ paratypes from Jardin Marron, Silhouette (390m), Palm forest, 1/10/2000-30/9/2001, leg. Justin Gerlach (S13).

Male. *Body length:* 2.0mm; *wing length:* 1.9mm.



Figs. 15-16. *Chaetogonopteron seychellense* spec. nova., holotype male, 15. ventral view of genital capsule; 16. lateral view of genital capsule.

*Head.* Vertex and frons broad, shining metallic green. Face blackish; eyes nearly touching each other on middle of face. Eyes pubescent (the pubescence is longest anteriorly). Palpus small, yellow, apically blackish, with short hairs and a short, black apical bristlet. Rostrum small, yellow. 2 diverging, black ocellar bristles; 2 converging, black vertical bristles, as long as the ocellars, but a little weaker; 2 much shorter, black postvertical bristles, in row with the postoculars; 2 tiny postocellars. Postocular cilia uniseriate, black.

*Antenna* relatively large, yellow; 3<sup>rd</sup> segment browned along margin. 1<sup>st</sup> segment bare. 2<sup>nd</sup> segment with a circle of short marginal bristlets. 3<sup>rd</sup> segment with upper and lower margins more or less parallel, with quadrangular basal angles, and broadly rounded apex, about 1.5 times as long as deep, very shortly pubescent. Arista dorsal, inserted near base of 3<sup>rd</sup> antennal segment, very shortly pubescent, rather long (about 0.8mm).

*Thorax* dorsally brownish yellow, with narrow darker lines along rows of acr and dc; sides of mesoscutum behind suture browned; a triangular blackish spot in front of scutellum; scutellum brownish yellow, with a darker median area. Pleurae yellow. Bristles black; 5 dc; acr uniseriate. Scutellum with strong black marginals; a remarkable row of short bristly hairs along margin. A weak propleural bristle.

*Legs.* Coxae and legs yellow. *Fore leg.* Coxa anteriorly with short, brown hairs, at apex a row of 5 short, thin hairlike bristles. Femur without bristles, apart from a very short and weak preapical pv. Tibia a little shorter than femur, with a short anterodorsal serration. Length of tibia and tarsal segments (in mm): 0.7:0.45:0.2:0.15:0.1:0.1. *Mid leg.* Coxa anteriorly and exteriorly with black hairs; a black exterior bristle. Femur with a rather strong preapical pv. Tibia a little shorter than femur; 2 ad; 1 pd near base. Length of tibia and 1<sup>st</sup> tarsal segments [segments 2-5 broken off] (in mm): 1.0:0.5. *Hind leg.* Coxa with a black exterior bristle. Femur without bristles. Tibia a little longer than femur, gradually somewhat thickening towards its apex; 3 rather short d; ventrally a row of lengthened, bent hairs. 1<sup>st</sup> tarsal segment much shorter than 2<sup>nd</sup> segment; ventrally near base 2 strong, slightly flattened bristles (shorter than 1<sup>st</sup> tarsal segment). Length of tibia and tarsal segments (in mm): 1.2:0.2:0.3:0.15:0.12:0.1.

*Wing* hyaline. Apical part of m1+2 more or less parallel to r4+5, ending at wing tip; wing boss near to tp. Apical part of m3+4 a little less than 1.5 times as long as tp. Halter yellow. Squama yellow, with broadly blackened margin, and black cilia.

*Abdomen.* Terga 3-6 dark brown, feebly shining; terga 1 and 2 yellow; tergum 2 with hind margin narrowly brown, and a brown anvil-shaped spot at middle. Sterna yellow. Hairs and bristles on terga black. Hypopygium rather small, dark brown; cercus adjacent, small, yellow.

Description of female. *Body length* 2.1-2.9mm; *wing length* 2.0-2.35mm. As male, with the following differences:

*Head.* Face shining dark metallic green, below nearly as wide as depth of 3<sup>rd</sup> antennal segment.

*Antenna.* 3<sup>rd</sup> segment brownish yellow to brown, broadly rounded, about as long as deep.

*Thorax.* Mesoscutum may be more largely brown; as in male there is always a blackish triangle in front of scutellum. Scutellum with a marginal row of bristly hairs, as male.

*Mid leg.* 2 ad, 1 pd, 1 av. *Hind leg.* Tibia not thickened. 1<sup>st</sup> tarsal segment without long bristles, shorter than 2<sup>nd</sup> segment (about 3:5).

*Abdomen.* Oviscapt small, yellow, with 8 very short, black acanthae.

Remarks: Describing his *Sympycnus violaceus* Lamb (1922: 405) remarks ‘The general appearance of the insect is not very reminiscent of the ordinary European forms, as it is more delicate and far less bristly, but the differences are not sufficient to warrant the erection of a new genus for a single species’.

The two species described here have much in common with Lamb’s species (1<sup>st</sup> segment of hind tarsus short, bearing some long hairs or bristles; rather large antennae; uniseriate acr; feebly bristled legs; small hypopygium), but differ in some points (2<sup>nd</sup> tarsal segment of hind leg much less than twice as long as 1<sup>st</sup> segment [in *violaceus* about 2.25 times as long], not modified as in Lamb’s species; size larger [Lamb’s species: male 1 1/3mm]). Provisionally these species (including *violaceus*) are included here in the large genus *Chaetogonopteron* de Meijere, 1914, mostly because of the shortened 1<sup>st</sup> segment of hind tarsus. Perhaps the uniseriate acr, and the long ventral hairs or bristles on 1<sup>st</sup> tarsal segment of hind leg could lead to the erection of a new genus.

### ***Chaetogonopteron* sp. S46**

Material examined: 1 ♂, Malaise trap Aldabra Picard 27/4/1974-21/1/1976 (Collected by R. Prys-Jones). Mixed scrub S46

Male: *Body length:* 2.3mm; *wing length:* 2.3mm.

*Head.* Vertex and frons shining dark metallic green. *Eyes touching each other*, leaving from face only two small shining dark metallic green triangles. Palpus very small, dark, with short pale hairs. Rostrum small, yellow. 2 diverging, black ocellar bristles; 2 black vertical bristles, nearly as long as the ocellars; 2 tiny postocellars. Postocular cilia uniseriate, short, yellow.

*Antenna* small; basal segments dark brown; 3<sup>rd</sup> segment yellow, small, about as long as deep, rounded, with a subacute, downward shifted apex. Arista dorsal, inserted at the middle of 3<sup>rd</sup> antennal segment, very shortly pubescent.

*Thorax* dorsally shining dark metallic green; sides of mesoscutum behind suture with a brownish hue; alar callus yellow; *scutellum* yellow, at base with a small, triangular, dark metallic green spot. Pleurae and postnotum yellow. Bristles black; 5 dc; acr uniseriate. Scutellum with strong black marginals. A weak propleural bristle.

*Legs.* Coxae and legs yellow. Segments 1-3 of fore tarsus blackish brown, segments 4 and 5 white. Extreme apex of hind tibia, and segments 1 and 2 of hind tarsus very feebly browned. *Fore leg.* Coxa at apex with 3 short, thin, hairlike black bristles. Femur ventrally near base with a few thin, hairlike bristles. Tibia a little shorter than femur; posteroventrally a regular row of 7 thin, hairlike bristles (all nearly twice as long as diameter of tibia). Tarsus: 1<sup>st</sup> segment posteroventrally with a regular row of 5 thin, hairlike bristles; 2<sup>nd</sup> segment gradually feebly broadened towards its tip; segments 3-5 somewhat bradened and flattened . Length of tibia and tarsal segments (in mm): 0.65:0.4:0.3:0.18:0.12:0.12. *Mid leg.* Coxa anteriorly and exteriorly with only short, black hairs; a black exterior bristle. Femur without bristles. Tibia [broken off after its middle]; 2 feeble ad, and 1 pd near base. *Hind leg.* Coxa with a black exterior bristle.



Femur without bristles, apart from a weak and short anterior preapical. Tibia a little longer than femur, gradually somewhat thickening towards its apex; 2 rather short d; at about 2/3 from base a thin, straight, erect pd. 1<sup>st</sup> and 2<sup>nd</sup> tarsal segments shortened and partly flattened; a thin, vermiform, wrinkled yellow clidium. Length of tibia and tarsal segments (in mm): 1.1:0.15:0.12:0.4:0.2:0.11.

*Wing* hyaline. Apical part of m1+2 more or less parallel to r4+5, ending at wing tip; wing boss before its middle. Apical part of m3+4 a little less than twice as long as tp. Halter yellow. Squama yellow, with black cilia.

*Abdomen.* Terga 1 and 2 yellow; terga 3-6 dark brown, dorsally with a metallic green shine. Sterna yellow. Hairs and bristles on terga short, black. Hypopygium small, dark brown, apically blackish; cercus adjacent, small, yellow.

Remarks: This species is nearly related to *Chaetogonopteron albipes* (Lamb, 1926), described by Lamb as a *Sympycnus* species from the Island of Rodriguez (Lamb 1925: 548), and mentioned from the Seychelles by Parent (1934: 300).

Compared with Lamb's description of *albipes* this species differs from it as follows:

- 3<sup>rd</sup> antennal segment yellow (in *albipes* 'the antennae are entirely black')
- thorax with a row of at least 8 uniseriate acr (in *albipes* '2 or 3 longish single rowed acrostichals')
- fore tibia with a row of 7 pv (in *albipes* 'tibia with 6 long hairs below')
- 1<sup>st</sup> segment of fore tarsus with a row of 5 pv (not mentioned in *albipes*)
- hind tibia with 2 d and remarkable erect pd (*albipes*: 'two bristles of a superior row')
- terga 1 and 2 of abdomen yellow, terga 3-6 dark brown (in *albipes* 'the entire abdomen is almost black except for the 2nd segment which is dull orange').

Perhaps Lamb made some mistakes in describing his species (number of acr, that may partly be broken off, as is the case in our specimen; 6 instead of 7 pv on fore tibia; colour of 1<sup>st</sup> abdominal tergum, difficult to see in bad light) and possibly he did not mention the row of pv on fore metatarsus, and the remarkable pd on hind tibia (might be broken off!). A problem could be the 3<sup>rd</sup> antennal segment colour, but here some variation may be possible (this segment is yellowish at base in subspecies *nepalensis* (Hollis, 1964)). The drawings in Lamb (1926) (p.549 fig.8 [fore leg], fig.9 [hind leg]; p.550 fig.10 [basal tarsal segments of hind leg]) correspond very well with the characters of our specimen.

We hesitate to describe the above species as a new species since we did not see Lamb's types.

## *Sympycnus* Loew, 1857

*Sympycnus allotarsis* spec. nova. Figs. 17-18.

Etymology: from Greek *allos*, 'other', 'deviating', and *tarsos*, 'tarsus', alluding to the peculiar shape and ornamentation of the 3<sup>rd</sup> segment of hind tarsus.

Material examined: Holotype ♂, allotype ♀, 1♂ and 4♀♀ paratypes from Aldabra: Picard, 27/4/1974-21/1/1976 (malaise trap in mixed scrub), collected by R. Prys-Jones. (Holotype: S58; paratypes: S47)

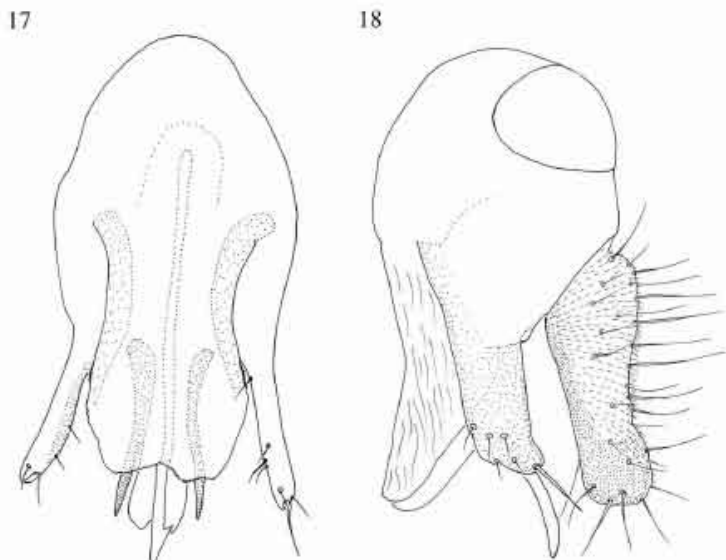
Male. *Body length:* 2.0-2.2mm; *wing length:* 1.75-1.8mm.

*Head.* Vertex and frons dark metallic green, with a brownish grey dusting. Eyes touching each other, leaving from face only two small dark metallic green triangles, with a brownish grey dusting. Palpus very small, yellowish. Rostrum very small, brown. 2 diverging, black ocellar bristles; 2 black vertical bristles, as long as the ocellars; 2 tiny postocellars. Postocular cilia uniseriate, short, yellowish white.

*Antenna.* Basal segments brownish; 3<sup>rd</sup> segment yellow, rather small, about as long as deep, rounded triangular, with a blunt apex. Arista dorsal, inserted at the middle of 3<sup>rd</sup> antennal segment, very shortly pubescent.

*Thorax* and scutellum dorsally shining dark metallic green. Pleurae dark brown, partly with a metallic green gloss. Bristles black; 5 dc; acr biseriate. Scutellum with strong black marginals, without laterals. 2 short and weak propleural bristles.

*Legs.* Coxae and legs yellow. Mid coxa, hind femur dorsally towards its apex, and most of hind tarsus feebly browned. *Fore leg.* Coxa anteriorly with short yellow hairs, that become bristlelike at apex. Femur with only a short, thin, hairlike pv at apex. Tibia: a very small ad; on apical half a very short, inconspicuous dorsal serration. Last three segments of tarsus shortened. Length of tibia and tarsal segments (in mm): 0.45:0.2:0.1:0.07:0.06:0.06. *Mid leg.* Coxa with a weak black exterior bristle. Femur with a preapical av. Tibia a little longer than femur: 3 ad, 2 pd. Length of tibia and tarsal segments (in mm): 0.7:0.3:0.13:0.1:0.08:0.07. *Hind leg.* Coxa with a black exterior bristle. Femur with a preapical av, preceded by some lengthened bristly hairs. Tibia a little longer than femur: 4 rather short pd; 5-6 very short, hairlike pv. 1<sup>st</sup> and 2<sup>nd</sup> tarsal segments not shortened, ventrally shortly spinulose; 3<sup>rd</sup> tarsal segment shortened and slightly broadened, ventrally spinulose and bearing an apical bristle. Length of tibia and tarsal segments (in mm): 0.8:0.24:0.19:0.1:0.15:0.1.



Figs. 17-18. *Sympycnus allotarsis* spec. nova., holotype male, 15. ventral view of genital capsule; 16. lateral view of genital capsule.

*Wing* hyaline, very feebly browned. Apical part of m1+2 more or less parallel to r4+5, ending at wing tip; wing boss before its middle. Apical part of m3+4 about twice as long as tp. Halter yellow. Squama yellow, with black cilia.

*Abdomen* brown, dorsally with a metallic green shine; terga 2 and 3 largely yellowish. Sterna yellow. Hairs and bristles on terga short, black. Hypopygium small, brown to yellowish brown; cercus brownish yellow.

Female: *Body length*: 2.1-2.5mm; *wing length*: 1.75-2.2mm. As male.

*Head*. Eyes broadly separated; face nearly parallel-sided. Palpus yellow, with a few short black bristlets; rostrum brownish yellow.

*Legs*. Fore and hind coxae yellow; mid coxa feebly browned, apically yellow. Legs yellow, but hind femur dorsally and towards its apex usually very feebly browned. Hind tarsus: 1<sup>st</sup> segment nearly twice as long as 2<sup>nd</sup> segment; 3<sup>rd</sup> segment not modified.

Remarks: The fact that 1<sup>st</sup> segment of hind tarsus is longer than 2<sup>nd</sup> segment, indicates that this species does not belong to the genus *Chaetogonopteron*.

## Diaphorinae

### *Chrysotus* Meigen, 1824

#### *Chrysotus seychellensis* Lamb, 1922

*Ch. seychellensis* Lamb, 1922: 400.

Material examined: 1 ♂: edge of marsh and Calophyllum inophyllum woodland, North island (0m), 30/7-1/8/2000 (S10); 1 ♀: Jardin Marron, Silhouette (390m), 1/10/2000-30/9/2001, Palm forest (S14); 6♂♂, 3♀♀: above Dauban mausoleum, La Passe, Silhouette (20m). Malaise trap 1-4/7/2000. Open area with herbaceous cover dominated by *Asystasia gangetica* and *Pueraria phaesaloides* (S26); 1♂, 4♀♀: D'Arros 21/6/03. (0m) Mixed 2<sup>nd</sup> woodland (S33, S34)

*Body length*: 1.7mm; *wing length*: 1.5mm.

*Head*. Vertex and frons blackish brown, with a metallic green hue. *Eyes touching each other*. Palpus small, yellowish brown, with a short apical bristlet. Rostrum small, yellowish brown. A pair of long and strong, black ocellar bristles; vertical bristles as strong as ocellars. 2 small postocellars. Postocular cilia rather short, dark.

*Antenna* blackish brown, short. 2<sup>nd</sup> segment with a circle of rather short marginal bristlets, dorsally with a longer bristle (longer than 3<sup>rd</sup> antennal segment), ventrally with shorter bristles. 3<sup>rd</sup> segment short, rounded, deeper than long. Arista apical, rather short (about 0.4mm), very shortly pubescent.

*Thorax*. Thorax shining dark metallic green, with coppery reflections; bristles black. 5 dc, preceded by a short bristle; about 7 irregular pairs of short acr. Laterals of scutellum hairlike, about ¼ times as long as the marginal bristles. A small, black propleural bristle.

*Legs*. Coxae and femora black, with a metallic green gloss; trochanters yellowish; fore and mid femora apically yellow; fore femur anteriorly slightly brownish. Tibiae and tarsi yellow; last 2 or 3 segments of tarsi very feebly infuscated. *Fore leg*. Coxa

anteriorly set with brownish yellow hairs, some of which are slightly longer, but not really bristlelike. Femur with 2 or 3 short and weak, hairlike preapical pv. Tibia about as long as femur, slender, with a short and weak d at about 2/5 from base, and some very short and weak bristlets at apex. Length of tibia and tarsal segments (in mm): 0.5:0.25:0.12:0.08:0.06:0.06. *Mid leg.* Coxa anteriorly and exteriorly with some hairlike, brownish yellow bristles. Trochanter with 2 short, thin, black bristles. Femur: 2 weak preapical pv; the hairs of the av row grow somewhat longer towards apex of femur. Tibia about as long as femur; a rather strong ad at about 2/5, preceded by a tiny bristlet; a short ad about middle; apical crown with 2 longer bristles. Length of tibia and tarsal segments (in mm): 0.6:0.35:0.15:0.1:0.07:0.06. *Hind leg.* Coxa with a black exterior bristle. Femur: 2 rather weak preapical pv. Tibia a little shorter than femur; 2 short ad, 4 yet shorter d; 2 longer bristles in apical crown. Length of tibia and tarsal segments (in mm): 0.7:0.25:0.17:0.1:0.07:0.06. *Wing* hyaline, with dark brown veins. m1+2 parallel to r4+5, ending just above wing tip. Tp about 4.5 times as long as apical part of m3+4. Halter yellow. Squama yellow, with black cilia.

*Abdomen* shining dark metallic green, with coppery reflections. Hairs and bristles on terga black. Hypopygium hidden; cercus threadlike, black.

Remarks: Answers well to the description given by Lamb (1922: 400-401), but according to him mid tibia has a small ad at middle, and a larger ad between this bristle and tip of tibia; perhaps this is a mistake? Hind femur of one male with some long av on apical half. Perhaps more than one species of *Chrysotus* is present on the Seychelles.

### ***Diaphorus* Meigen, 1824**

The genus *Diaphorus* is reported here for the 1<sup>st</sup> time on the Seychelles. Two species were found. They are diagnosed but not named since a revision is needed of the Afrotropical and Oriental species in order to be sure that they are new for science.

### ***Diaphorus* sp. S11**

Material examined: 2♂♂, 1♀, Jardin Marron, Silhouette (390m), 1/10/2000-30/9/2001. Palm forest (S11).

Male: *Body length:* 4.3-5.5mm; *wing length:* 3.7-4.0mm.

*Head.* Eyes touching each other on frons over a long distance, leaving from frons only two very small, black triangles. Antennae inserted well below middle of head. Face blackish, somewhat sunken between the eyes, with nearly parallel side margins, about half as wide as the width of an eye, seen from in front. Palpus small, yellow, with black hairs and a weak, black apical bristle. Rostrum brown. A pair of strong, black, diverging ocellar bristles. 2 small postocellars. Upper postocular cilia very short, black; lateral and lower postocular cilia yellowish, becoming longer and pluriserial below. Occiput black.

*Antenna* short; basal segments brownish black; 3<sup>rd</sup> segment brownish yellow, slightly infuscated along apical margin. 2<sup>nd</sup> segment with a circle of rather short marginal bristlets, that are somewhat longer dorsally. 3<sup>rd</sup> segment short, rounded, about 1.5 times as deep as long. Arista dorsal, very shortly pubescent, about 2/3 times as long as the height of an eye.

*Thorax.* Thorax black, with a green shine, probably with a brownish dusting; bristles black. 5 pairs of nearly equally long dc; acr short, biseriate. Laterals of scutellum short and weak (about  $\frac{1}{4}$  as long as marginals). 1 longer, and 1-2 shorter propleural bristles.

*Legs.* Coxae brown (fore and hind coxae more yellowish brown), apically yellowish; trochanters yellow. Fore leg yellow. Mid leg yellow, with basal half of femur dark brown, and tarsus feebly infuscated from tip of 1<sup>st</sup> segment onward. Hind leg dark brown, with basal half of tibia yellowish. *Fore leg.* Coxa anteriorly with black hairs, and 3 strong black bristles [broken off in the larger specimen]. Femur posteroventrally with a row of short bristly hairs, that grow slightly longer towards apex of femur (being there about as long as greatest depth of femur). Tibia a little longer than femur, slender, with 3 short and weak dorsal bristles. No claws; pulvilli strongly enlarged, about 1.5 times as long as tarsomere 5. Length of tibia and tarsal segments (in mm): 1.15:0.6:0.25:0.2:0.12:0.1. *Mid leg.* Coxa with black hairs and bristles. Femur with 1-2 preapical av. Tibia a little longer than femur; 1 long and 1 short ad; 2 small pd; 2-3 small v. Claws present; pulvilli not enlarged. Length of tibia and tarsal segments (in mm): 1.4:0.8:0.35:0.25:0.1:0.07. *Hind leg.* Coxa with a black exterior bristle. Femur on apical half anteroventrally and posteroventrally with rows of longer hairs and bristles. Tibia longer than femur (16:13); 1 small ad near base; a row of d, 3 or 4 of which are longer. Claws present; pulvilli not enlarged. Length of tibia and tarsal segments (in mm): 1.6:0.5:0.5:0.3:0.15:0.1.

*Wing* of typical *Diaphorus* shape (broadest before its middle), rather strongly browned. Tip straight, more than half as long as apical part of m3+4. Anal vein not reaching wing margin. Halter pale yellow. Squama yellow, with black cilia.

*Abdomen* dark brown to brownish black; 2<sup>nd</sup> segment yellow (tergum and sternum). Hairs and bristles on terga black; longer marginal bristles on sterna 2-3. Tip of abdomen with 4 black macrochetae. Hypopygium brown, hidden; cerci rather short, brown.

*Female:* Body length 3.3mm; wing length 3.2mm. As male except:

*Head.* Inner margins of eyes parallel on frons and face; frons and face equally broad. Antennae inserted above middle of head. Palpi brown, a little larger than with the male. Vertical bristles present, as strong as the ocellars.

*Fore leg.* Claws present; pulvilli not enlarged. *Hind leg.* Tibia yellow, only browned towards its apex.

*Abdomen* entirely brownish black.

*Remarks:* There is no mention of *Diaphorus* spp. from the Seychelles in Lamb (1922), nor in the Catalogue of Afrotropical Diptera (Dyde & Smith: Dolichopodidae) (1980). There are slight differences in size and bristling between the two male specimens. The female seems to belong to the same species, in spite of the different colouring of the abdomen and of the hind tibia; it has 3 strong bristles on fore coxa, like the male.

### ***Diaphorus* sp. S45**

*Material examined:* 1♂, 10♀♀, Malaise trap Aldabra Picard 27/4/1974-21/1/1976 (Collected by R. Prys-Jones). Mixed scrub (S45).

*Male:* *Body length:* 2.3mm; *wing length:* 2.0mm.

*Head.* Eyes touching each other on frons, leaving from it only a small dark metallic green coloured triangle above antennae. Face broad, nearly parallel-sided, dark metallic

green, with a brownish dust. Palpus small, yellow. Rostrum small, brownish yellow. [All bristles broken off]. Postocular cilia yellow.

*Antenna* small; basal segments dark brown; 3<sup>rd</sup> segment yellowish brown, about twice as deep as long, with downward shifted, blunt apex. Arista short, dorsal (giving the impression of being apical, inserted far above blunt apex of 3<sup>rd</sup> antennal segment).

*Thorax* dark metallic green, feebly shining. 5 dc; acr irregularly biseriate [most bristles broken off]. A weak propleural bristle.

*Legs*. Fore coxa brownish yellow; mid and hind coxae brown. Fore and mid femora yellowish brown, apically broadly yellow. Fore and mid tibiae and tarsi yellow; 5<sup>th</sup> tarsal segments feebly infuscated. [Hind legs both broken off]. *Fore leg*. Coxa anteriorly with short, pale hairs, and a row of 4 rather weak black bristles. Femur posteroventrally with a row of weak black bristles, growing longer towards tip of femur (being there nearly as long as greatest depth of femur). Tibia about as long as femur, without bristles. 5<sup>th</sup> tarsal segment without claws, with enlarged pulvilli. Length of tibia and tarsal segments (in mm): 0.6:0.3:0.15:0.1:0.07:0.05. *Mid leg*. Coxa anteriorly and exteriorly with some bristly black hairs; trochanter with 2 thin dorsal bristles. Femur anteriorly and posteriorly with rows of black hairs. Tibia about as long as femur; 1 ad near base, some apical bristles. 5<sup>th</sup> tarsal segment with claws; pulvilli not enlarged. Length of tibia and tarsal segments (in mm): 0.7:0.35:0.2:0.12:0.08:0.07. *Hind leg*. Coxa with a black exterior bristle. [Both hind legs broken off].

*Wing* hyaline. Apical part of m1+2 more or less parallel to r4+5, ending at wing tip; wing boss just before its middle. Apical part of m3+4 about twice as long as tp. Halter yellowish white. Squama yellowish white, with white cilia.

*Abdomen*. Terga dark metallic green, with a brownish hue, feebly shining, with black hairs. Sterna brown. [Macrochetae at tip of abdomen broken off]. Hypopygium small, with blackish appendages; cercus adjacent, small, dark.

Female: *Body length*: 2.2-2.4mm; *wing length*: 2.0-2.2mm. As male.

*Head*. Frons and face wide, equally broad, nearly parallel-sided.

*Legs*. Fore femur yellowish brown to brown, apically broadly yellow; mid and hind femur brown, apically narrowly yellow. Hind tibia and tarsus yellow; 5<sup>th</sup> tarsal segment feebly infuscated. *Fore leg*. Row of pv on femur less developed than in male, the longest bristles much shorter than greatest depth of femur. 5<sup>th</sup> tarsal segment with claws; pulvilli not enlarged. *Mid leg*. Femur with only short hairs. *Hind leg*. Femur with short hairs; near apex some antero- and posteroventral hairs slightly longer. Tibia: 1 ad, 3 pd, 1 v, all weak and short, some apical bristles. Length of tibia and tarsal segments (in mm): 0.8:0.3:0.25:0.16:0.1:0.1.

## Hydrophorinae

### *Thinophilus* Wahlberg, 1844

The genus *Thinophilus* is recorded for the first time in Seychelles.

### *Thinophilus* (*Schoenophilus*) sp. S27

Material examined: 2♀, *Hevea brasiliensis* plantation, Jardin Marron, Silhouette



(350m). 7-10/7/2000 (S27).

Female: Body length 2.0-2.1mm; wing length 2.2-2.3mm.

Belongs to subgenus *Schoenophilus* (4 equally long, short, but strong dc; no acr; scutellum without laterals; 3<sup>rd</sup> antennal segment rounded; arista almost apical).

Thorax and abdomen brownish black. Legs dark brown (yellowish on trochanters and apices of femora, less so on tarsi), very feebly bristled (no preapical bristle on hind femur). 1<sup>st</sup> segment of hind tarsus nearly twice as long as 2<sup>nd</sup> segment. 5<sup>th</sup> segments of all tarsi lengthened. Wing feebly brownish tinged. Apical part of m3+4 more than 3 times as long as tp.

### ***Thinophilus indigenus* Becker, 1902**

Material examined: 1♂, Malaise trap Aldabra Picard 27/4/1974-21/1/1976 (Collected by R. Prys-Jones). Mixed scrub (S49).

Male: Body length: 3.4mm; wing length: 2.7mm.

*Head.* Vertex, frons and face shining dark metallic green, with indistinct pale dusting. Clypeus feebly protruding. Palpus large, as is usual in the genus, yellow, with scattered black bristlets and bristly hairs. Rostrum large, dark brown, apically yellow. 2 black vertical bristles; [other bristles broken off]. Postocular cilia pluriserial, yellow-white.

*Antenna.* Basal segments yellow; [3<sup>rd</sup> segment broken off].

*Thorax.* Mesoscutum and scutellum shining dark metallic green, with coppery reflections; sides of mesoscutum behind suture with a dull black spot in front of the wings; small oval dull black spot in front of the scutellum; along the lines of the dc vague darker bands. Pleurae shining dark metallic green, with coppery reflections. Bristles black; 6 dc; no acr. [Bristles of scutellum broken off]. 2 weak, yellow propleural bristles.

*Legs.* Fore coxa yellow, darkened at extreme base; mid and hind coxae dark brown, with a metallic green shine, apically yellow. Legs yellow; 5<sup>th</sup> segments of all tarsi feebly browned. *Fore leg.* Coxa anteriorly with 2 rather long black bristles, and about 7 scattered black hairs; at apex a row of 4 bent black bristles. Femur ventrally on basal 2/3 with an irregular row of thin black bristles; on apical 1/3 a row of 3-4 long black bristles (nearly as long as greatest depth of femur). Tibia a little shorter than femur; 1 short d about middle; posteroventrally the hairs are more bristlelike, and give the impression of a very short comb. 1<sup>st</sup> tarsal segment posteroventrally with a comparable comb of very short bristly hairs. Length of tibia and tarsal segments (in mm): 0.8:0.35:0.125:0.125:0.1:0.125. *Mid leg.* Coxa with a black exterior bristle, and some scattered black hairlike bristles; at apex a row of weak, bent black bristles. Femur ventrally with a row of short black bristles; posteroventrally near apex 2 rather short pv, preceded by some short hairlike bristles. Tibia about as long as femur: 2 ad, and some apical bristles. Length of tibia and tarsal segments (in mm): 1.0:0.55:0.22:0.15:0.1:0.125. *Hind leg.* Coxa with a black exterior bristle. Femur with 4 ad. Tibia about as long as femur: 3 ad, 2 weak pd, 3 short v. Length of tibia and tarsal segments (in mm): 1.4:0.35:0.3:0.2:0.125:0.125.

*Wing* hyaline, with feeble infuscations along tp and around wing boss. Apical part of m1+2 converging with, but apically more or less parallel to r4+5, ending at wing tip; wing boss before its middle. Apical part of m3+4 a little longer than tp (about 6:5). Halter yellow. Squama yellow, with yellowish white cilia.



*Abdomen.* Terga 1-5 shining dark metallic green, with coppery and bluish reflections (the bluish reflections are more distinct on tergum 4, and especially on tergum 5); tergum 6 blackish, with a bluish shine. Sterna greyish black, partly with a metallic shine, bearing brown hairs. Hairs and bristles on terga very short, black. Hypopygium small, dark brown; cercus leaf-shaped, blackish with a metallic green shine.

Remarks: A comparison with Becker's specimens from Egypt and specimens from Africa in our collection suggest that the species of the Seychelles is indeed *Th. indigenus*. Anyway the genitalia are the same.

## Acknowledgements

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# A wider range than suspected: new locality for the endemic Mauritian dung beetle *Nesosisyphus pygmaeus* (Coleoptera: Scarabaeidae)

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**Abstract:** A second locality for the endemic Mauritian dung beetle *Nesosisyphus pygmaeus* Vinson (Coleoptera: Scarabaeidae) is recorded. The disjunct range of this species comprises Mt Ory and Brise Fer.

**Keywords:** Scarabaeidae, Sisyphini, dung beetles, distribution, Brise Fer

The endemic Mauritian dung beetle genus *Nesosisyphus* Vinson was well studied by its author some fifty years ago (Vinson 1946, 1951). The four known species have restricted ranges in the mountainous parts of the island. With 2.3-3.2 mm body length, *Nesosisyphus pygmaeus* (Fig. 1) is the smallest member of the genus and the smallest roller dung beetle of the world (Haaf 1955, 1959). Despite being alate, the species has previously only been recorded from Mt Ory (Vinson 1958). Vinson (1951) presumed the cause of this restricted distribution to be the rapid loss of the surrounding pristine forest over the last century (e.g. Vaughan & Wiehe 1937).

Recently, one of us (S.M.) found another population of *Nesosisyphus pygmaeus* in a new locality approximately 24 kilometres away from the already known locality Mt Ory, the details of which are as follows:

MAURITIUS, Brise Fer Forest; 20°22'S, 57°26'W; 35 individuals, 01-06.vii.2003, using baited pitfall trap (suspended chicken manure). Voucher specimens are deposited in The Natural History Museum, London.

We suppose that this population was previously unrecorded due to the inaccessibility of the Brise Fer forest. The creation of tracks in the recently established Black River Gorges National Parks has resulted in the opening up of previously poorly surveyed areas such as Brise Fer.

Overall, this finding highlights the importance of devising a proper monitoring programme on Mauritian biodiversity. The availability of updated knowledge on species distribution is important when conservation priorities are determined. Interestingly, this finding also suggests a more complicated speciation scenario than Vinson (1951) originally suggested for *N. pygmaeus*. The existence of more than one population of *N.*

*pygmaeus* should also reduce the risk of extinction of the species, at least by one step.

#### ACKNOWLEDGEMENTS

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**Figure 1.** *Nesosisyphus pygmaeus*, collected in the Brise Fer forest in July, 2004; scale: 2mm (Photo: Harold Taylor, NHM Photo Unit).

# Two new *Epidapus* species from the Seychelles islands (Diptera: Sciaridae)

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## INTRODUCTION

The dipterous family Sciaridae (Black Fungus Gnats) is found on every continent and is characterised by its large number of species and individuals. Despite their ecological importance, these micro-Diptera have been largely neglected because of their small body-size (usually 0.7-15 mm in tropical regions), their often cryptic lifestyle and the difficulties involved with their identification.

According to a species inventory, more than 2,400 valid sciarid species have been described worldwide (Menzel & Mohrig (2000) and subsequent publications). Very little is known about the Sciarid fauna of the Seychelles islands. Only 12 species have been previously recorded from Seychelles, described by Enderlein (1911, 1912) and Kieffer (1912) in the genera *Sciara* Meigen (8 species), *Ceratiosciara* Enderlein (1), *Amesicrium* Enderlein (1), *Psectrosciara* Kieffer (1) and *Scythropochroa* Enderlein (1). Of those, *Amesicrium nanum* Enderlein, 1911 (Cecidomyiidae) and *Psectrosciara mahensis* Kieffer, 1912 (Scatopsidae) did not belong to the family Sciaridae.

To date, 69 species belong to the genus *Epidapus* Haliday worldwide, of which 56 are recent, 12 are fossil and 1 are fossil and recent species. They are distributed in the subgenera *Cornepidapus* Menzel & Mohrig, 2000 (2 species), *Epidapus* Haliday, 1851 s.str. (35), *Macrotarsus* Mohrig, 2004 (4), *Pseudoaptanogyna* Vimmer, 1926 (22), *Pseudoepidapus* Mohrig, 1982 (2) and 4 species where the subgenus if not known. *Epidapus pallidus* (Séguy, 1961), that was described by Séguy as *Afrosciara pallida* and combined by Menzel & Heller (2007) in the subgenus *Pseudoaptanogyna* is also included therein. *Epidapus pallida* and the two new *Epidapus* species were collected during the project "Indian Ocean Biodiversity Assessment 2000-2005" of the Nature Protection Trust of Seychelles. Thus there are now 3 *Epidapus* species known from Seychelles. The new species are described and figured in detail in this publication.

All specimens were prepared as permanent mounts for microscopic examination using Canada balsam as mountant. They are deposited in the collections of Deutsches Entomologisches Institut, ZALF e.V., Müncheberg, Germany, and the University Museum of Zoology, Cambridge, UK. The morphology of the adults and the terminology (naming and description of characteristics of Sciaridae, technical terms) comply with Menzel & Mohrig (1997, 2000).

## SPECIES DESCRIPTIONS

### *Epidapus (Epidapus) gracilipes* Menzel spec. nov. (Figs 1-4)

Type locality. North Island (Seychelles).

Type material. Holotype: male, on *Lantana camara*, Malaise trap, 30.7.-1.8.2000, leg. J. Gerlach. Paratypes: 1 male, same data as holotype; 4 males, Silhouette, Mon Plaisir (Seychelles), Malaise trap, 8.7.-6.8.2000, leg. Gerlach.

Location of types. Holotype in the collection of German Entomological Institute, Müncheberg, Germany. Paratypes in the collections of German Entomological Institute, Müncheberg (3 males) and University Museum of Zoology, Cambridge, UK (2 males).

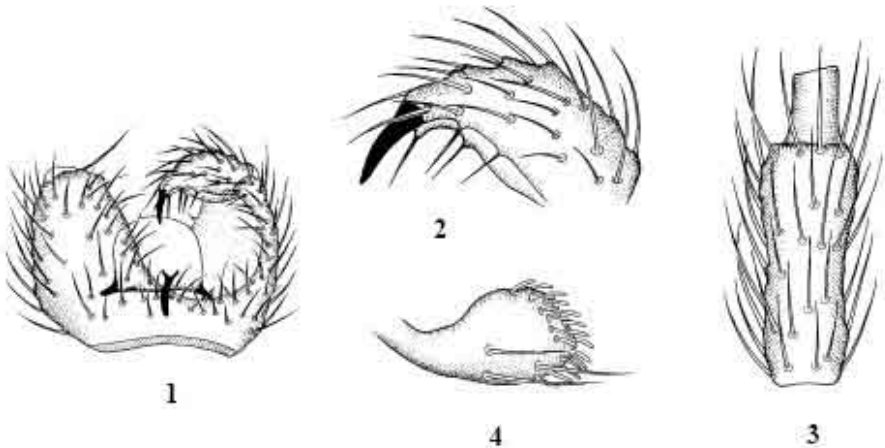
Etymology. The new species was given the name “gracilipes” on the basis of distinctly narrow and long legs (latin: gracilis = narrow, dainty; pes = leg).

Description. Male (colour of specimens bleached by preservative): Eyebridge complete, 2 facets wide (sometimes also 3 facets wide in middle). Antennae long; basal segments of antennae spherical and brown; 4th flagellomere 3.2 to 3.5 times as long as wide; setae of antennae very coarse, strongly curved so lying almost parallel to surface and brown; setae longer than segment width; basal part about 2.5 times as long as wide and without sensillae; necks of flagellomeres unicolorous pale brown, sharply connected and distinctly attenuated; neck of 4th flagellomere, 1.3 to 1.5 times longer than width of base and about 1/3 length of segment. Prefrons with 4 to 7 coarse setae. Forehead with 4 to 8 long, strong setae. Labrum and labellum distinctly reduced. Palpi small, with 1 segment and pale brown; basal segment very short, ovoid and with 3 to 4 setae; sensory area without margin and either at side or at apex; sensillae long and curved. Thorax narrow, flat and pale brown. Postpronotum bare. Anteppronotum with only 1 coarse bristle (rarely with 2) on each side. Mesonotum yellow, only marginal part slightly brown; setae of mesonotum sparse, coarse and brown with only 5 to 8 lateral setae. Scutellum well differentiated, with some short setae and 2 long, strong, marginal setae. Katepisternum attenuated wedge shaped (foreleg widely separated from p2/p3). Mediotergite distinctly tapered and with smaller bristle group (3 to 4 bristles). Postthoracic episternum without bristles. Coxae and legs narrow and yellow (slightly smokey due to fine microtrichia); femur of foreleg narrow and not swollen; foretibia without spines among setae; apex of foretibia with sparse patch of bristles without margin (without diagnostic difference from other tibial setae); all tibial spurs short, pen-like and narrow; one spur on each of p2 and p3 distinctly reduced; tibia of p3 without posterodorsal row of spines; apex of tibia of p3 without circlet of spines; tarsal segments not flattened or keel shaped. Claws without teeth, narrow and slightly curved. Wings pale; base of wings wedge shaped, with distinctly reduced anal area; posterior wing veins very weak (not distinct); wing membrane and posterior wing veins without macrotrichia; x distinctly longer than y, both bare; M-stem very weak and longer than M-fork; M-fork short and triangular and widely divergent; R, R1 and R5 with weak, dorsal macrotrichia; R with 3 macrotrichia; R1 without or with 1 to 2 macrotrichia; R5 with weak, sparse macrotrichia (9 to 12 macrotrichia over entire length); R1 very short, merging with c well before base of M-fork;  $R1 = 0.4 \text{ to } 0.5 R$ ;  $C = 3/4 w$  (M-stem, CuA-stem and x-y index on pale and damaged

wings not visible). Halteres pale with long stalk; haltere-head index = 2.6 to 2.9; haltere head short, with a reduced row of bristles (bare or with 1 to 5 bristles). Abdomen yellow-brown, with sparse, finer, shorter and paler setae. Hypopygium wider than high and pale brown; gonocoxites with coarse, long bristles; ventral base of genitalia without basal lobe or group of bristles; inner side of gonocoxites with very long setae; gonostyles triangular and tapered, pointed at apex and short (about 1.8 times as long as wide); apex of gonostyles slightly curved inwards and downwards, narrow apical tooth on lobe in attenuation of outer side of gonostyles without central process; inner side of gonostyles slightly emarginated with 3 to 4 coarse setae as far as middle (all shorter than tooth; only 1 bristle at base of tooth on higher socket and hyaline, similar to a spine); setae on apex of gonostyles sparse, coarse and long. Tergite IX trapezoid with widespread coarse bristles. Tegmen membranous, wider than high and with very short basal process; apex of tegmen high and rounded; area of teeth in specimen not identifiable. Aedeagus short and strong, with funnel shaped, flat and weakly sclerotised base. Size: 0.8-1.0 mm.

Female: Unknown.

Remarks. The new species is extremely narrow and dainty. It has similarities to *Epidapus strenuus* Mohrig, 2004 from Papua New Guinea and *Epidapus parvus* Mohrig, 1999 from New Zealand (Mohrig & Jaschhof 1999, Mohrig 2004). It differs from both species in the following characteristics: thorax very flat and attenuated; coxae and legs very narrow; legs long; all tibiae without spines among setae, posterodorsal row of spines on posterior tibia missing; flagellomeres distinctly longer (more than 3 times as long as wide), with longer necks and dense setae; katapisternum flat and distinctly backwards pointing; tegmen high; apex of gonostyles curved under with apical tooth on lobe; inner side of gonostyles without hyaline spines (with only 3 to 4 stronger and longer setae).



**Figs 1-4.** *Epidapus gracilipes* Menzel, male. 1) hypopygium (ventral view). 2) gonostyle (ventral view). 3) 4th flagellomere. 4) palpus (lateral view).

*Epidapus (Macrotarsus) nanus* Menzel spec. nov.

(Figs 5-10)

Type locality. North Island (Seychelles).

Type material. Holotype: male, on *Lantana camara*, Malaise trap (M11), 30.7.-1.8.2000, leg. J. Gerlach. Paratypes: 1 male, same data as holotype; 4 males, Silhouette, Mon Plaisir (Seychelles), Malaise trap (M6), 8.7.-6.8.2000, leg. Gerlach.

Location of types. Holotype in the collection of German Entomological Institute, Müncheberg, Germany. Paratypes in the collections of German Entomological Institute, Müncheberg (3 males) and University Museum of Zoology, Cambridge, UK (2 males).

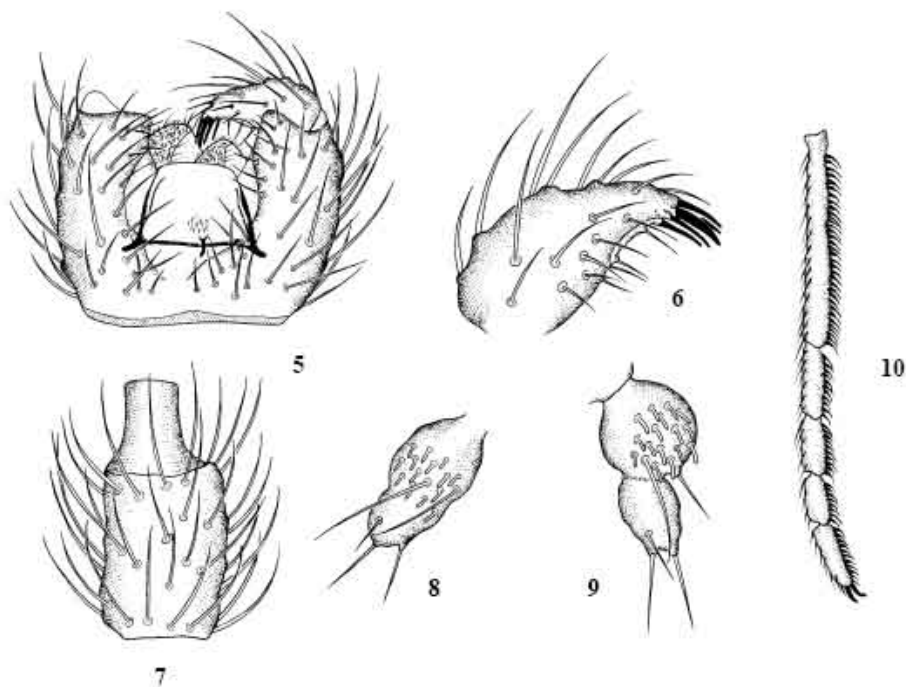
Etymology. The name describes the small size of the species (latin: nanus = diminutive).

Description. Male (colour of specimens bleached by preservative): Eyebridge complete, 2 to 3 facets wide. Antennae short; basal segment of antennae spherical and dark; 4th flagellomere, 1.9 to 2.1 times as long as wide; setae of antennae coarse, long, erect and dark brown, slightly longer than segment width; basal part rough, about 1.5 times as long as wide and without sensillae; necks of flagellomeres unicolorous brown, sharply connected and slightly attenuated (neck of 4th flagellomere only 1.1 times as long as width of base; neck of 6th flagellomere distinctly longer and narrower); neck of 4th flagellomere 0.5 to 0.6 times length of basal part. Prefrons with 4 to 5 coarse and distinctly long setae. Forehead bare or with only 1 fine bristle. Labrum and labellum distinctly reduced. Palpi small, pale brown with distinct tendency to reduction to 1 segment (if 2 segments, then apical segment only small and slight and partially fused to basal segment); basal segment very short and spherical with 1 to 2 setae, 2nd segment with 2 to 3 setae (if palpi with 1 segment, then with 4 to 6 setae); sensory area very small, without margin and at side; sensillae short and fine. Thorax brown, yellow laterally. Postpronotum bare. Anteppronotum with only 2 to 3 coarse lateral setae. Mesonotum yellow-brown, only marginal parts slightly darker; setae on mesonotum coarse and dark brown with some stronger lateral setae. Scutellum flat and poorly differentiated with some short setae and 2 long, strong marginal setae. Katepisternum elongated wedge shape (foreleg widely separate from p2/p3). Mediotergite with smaller group of bristles (3 to 4 bristles). Posterior episternum without bristles (with 1 small bristle in only one specimen). Coxae and legs strong and yellowish (slightly smokey due to fine microtrichia); femur of foreleg not distinctly swollen; foretibia without spines among setae, but usually with 2 to 4 stronger setae; apex of foretibia with sparse patch of bristles without margin (setae on apex of tibia only slightly coarser and longer); tibial spurs narrow, pen-like and relatively long; one spur on each of p2 and p3 distinctly reduced; tibia of p3 with weak posterodorsal row of coarser, darker spines; apex of tibia of p3 without circlet of spines; all tarsal segments flattened, keel shaped and with a dense, coarse row of setae. Claws without teeth, narrow and slightly curved. Wings wide and relatively short; base of wings only slightly tapered, with relatively well developed anal area; all posterior wing veins very weak (not distinct); wing membrane slightly smokey due to dense microtrichia; wing membrane and posterior wing veins without macrotrichia;  $x = 1.0$  to  $1.4 y$ , both bare; CuA-stem weak, about  $1/3 x$ ; M-fork narrow; R, R1 and R5 with only dorsal macrotrichia; R with 5 to 7 macrotrichia; R1 with 2 to 3 macrotrichia; entire



length of R5 with dense macrotrichia (15 to 17 macrotrichia); R1 very short merging with c well before base of M-fork;  $R1 = 0.7 R$ ;  $C = 2/3 w$  (M-stem and area of M-fork on damaged wings not recognisable). Halteres brown and short, with reduced stalk; haltere-head index = 2.0 to 2.3; head with 1 to 2 rows of bristles (6 to 10 bristles). Abdomen pale brown with finer and darker setae. Hypopygium wider than high and pale brown; gonocoxites and gonostyles with coarse, long bristles; ventral base of genitalia without basal lobe or group of bristles; inner side of gonocoxites with very long setae; gonostyles short, triangular and distinctly tapered (about 1.8 times as long as width of base); apex of gonostyles with sparse bristles and, in attenuation of outer side, with a narrow tooth without central process, with 4 hyaline spines near tooth (1 spine above, 2 spines adjacent and 1 spine below tooth; all spines at most as long as tooth); upper half of inner side of gonostyles with slight emargination and short setae; tergite IX short, trapezoid with widespread long, strong bristles. Tegmen membranous, only slightly wider than high and trapezoid; apex of tegmen highly arched, flattened and without central process; basal structure very short; area of teeth very small with fine, single tipped teeth (not identifiable in some specimens). Aedeagus short, with flat, funnel-like and weakly sclerotised base. Size: 0.8-1.0 mm.

Female: Unknown.



Figs 5-10. *Epidapus nanus* Menzel, male. 5) hypopygium (ventral view). 6) gonostyle (ventral view). 7) 4th flaggellomere. Figs 8-9, one- and two-segmented palpus (lateral view). 8) tarsal segments of hind leg (lateral view).

Remarks. *Epidapus nanus* is close to *Epidapus primus* Mohrig, 2004 from Papua New Guinea (Mohrig 2004). Both have keel-like tarsal segments on p1 to p3 and short and triangular gonostyles with a narrow tooth on apex. There is no identifiable difference in antennal structure. In contrast to the new species, *E. primus* Mohrig is distinctly larger (= 1.8 mm). Also, the eyebridge of *E. primus* Mohrig is 4 facets wide, the palpi have more segments (2 or 3 distinct segments), there is a much denser patch of bristles on apex of foretibia, stronger keel and lobe shaped tarsal segments and narrower gonostyles with 2 hyaline spines. *Epidapus nanus* has a narrower eyebridge, more distinctly reduced (usually 1 segment) palpi, a sparse patch of bristles on foretibia, a trapezoid tegmen as well as shorter, more compact gonostyles with 4 hyaline spines.

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We would like to thank Dr Justin Gerlach (University Museum of Zoology, Cambridge; Nature Protection Trust of Seychelles, Victoria, Mahé) for the opportunity to could work on some sciarid specimens from the Seychelles. We also thank Heidemarie Lehmann (Eberswalde, Germany) for sciarid preparation, and Bianka Katnig (Hohenfinow, Germany) for her technical help with the figures of the new species.

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# The new faunistic data on Calliphoridae and Sarcophagidae (Diptera) of the Republic of Seychelles

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**Abstract:** The new faunistic data data on 5 calliphorid and 7 sarcophagid species of Seychelic Republic are given. *Cosmina fuscipennis*, *Ihositya nomita*, and *Asceloctella malgache* are firstly recorded for Seychelles Republic. One new combination of the specific names is presented: *Asceloctella* (s. str.) *malgache* (Zumpt, 1964), comb. nov.

**Key words:** Seychelles, fauna, Calliphoridae, Sarcophagidae.

## INTRODUCTION

In previous article (Verves, 2003) I tried to generalize all faunistic and taxonomic literature data about Seychelles calliphorids and sarcophagids and published some new faunistic records. The new original results of identification of the flies collected by J. Gerlach and others members of Indian Ocean Biodiversity Assessment 2000-2005 and by R. Prys-Jones in 1974-1976 are published for the first time.

### List of species

FAMILY CALLIPHORIDAE  
SUBFAMILY CALLIPHORINAE  
TRIBE LUCILIINI

#### *Hemipyrellia fernandica* (Macquart 1855).

*Lucilia fernandica* Macquart 1855: 132 [112].

*Hemipyrellia fernandica*: Pont 1980: 793; Verves, 2003: 2; Zumpt 1962: 61.

*Lucilia taeniops* Bigot 1860: 542.

*Hemipyrellia taeniops*: Aubertin 1931: 500; Zumpt 1962: 61.

**Material examined:** Seychelles: Aride Island, 07.2000 (J. Bowler), female; North Island, 30.07.2000 (J. Gerlach), 2 females.

**Distribution:** widely distributed in Madagascan and Afrotropical Regions. Seychelles: Aride\*<sup>1</sup>, Cousine, Silhouette, North\*.

**Bionomics:** unknown.

#### *Hemipyrellia germana* (Robineau-Desvoidy 1830).

*Lucilia germana* Robineau-Desvoidy 1830: 455.

*Hemipyrellia germana*: Pont 1980: 793; Verves 1986: 548, 2003: 2.

*Lucilia brunnipes* Macquart 1843: 295 [138].

*Hemipyrellia brunnipes*: Zumpt 1956: 65; 1962: 63.  
*Lucilia argenticeps* Macquart 1851: 219 [246].  
*Lucilia madagascariensis* Macquart 1851: 219 [246];  
*Lucilia madagascariensis*: Villeneuve 1916: 205; 1918: 507.  
*Lucilia borbonensis* Macquart 1851: 220 [247].  
*Lucilia smaragdosphira* Bigot 1860: 543.  
*Hemipyrellia pseudofabriciana* Enderlein 1935: 246.

**Material examined:** Seychelles: Aride Island, 2000 (J. Gerlach), 4 males; Aldabra Archipelago, Picard Island, 1974-1976 (R. Prys-Jones), 2 males, 25 females.

**Distribution:** widely distributed in Madagascan region. Seychelles: Aride\*; Aldabra.

**Bionomics:** unknown.

#### SUBFAMILY CHRYSOMYINAE

***Chrysomya albiceps*** (Wiedemann 1819).

*musca albiceps* Wiedemann 1819: 38.

*Chrysomya albiceps*: Bezzi, 1923: 83; James 1977: 541; Pont 1980: 788; Schumann 1986: 39; Senior-White et al. 1940: 143; Verves 1986: 548, 2003: 3; 2005: 257; Zumpt 1956: 182; 1962: 68.

*Compsomyia mascarenhasi* Seguy 1928: 11, as var. of *Musca albiceps* Wiedemann, 1819: 38

**Material examined:** Aldabra Archipelago: Picard Island\*, 1974-1976 (R. Prys-Jones), 2 females.

**Distribution:** Afrotropical and Madagascan Regions, southern part of Palaearctic, Hindustan; introduced to Latin America. Seychelles: Mahe, Silhouette, Dennis, Cosmoledo, Amirantes, Farquhar, Aldabra.

**Bionomics:** larvae develop in dead animals and faeces. 1<sup>st</sup> stage larvae feed on the exudates of decomposing matter in which they are laid as eggs; 2<sup>nd</sup> and 3<sup>rd</sup> stage maggots become predatory on the larvae of other dipterans. Larvae produced facultative primary and secondary cutaneous myiasis in humans and different mammals. Flies of both sexes feed at faeces, corpses, and on fruits; synanthropic species (Adham *et al.* 2001; Bartholo *et al.* 2002; Del Bianco *et al.* 1999; Erzinclioglu & Whitcombe 1983; Gomez & Von Zuben 2003; Grassberger *et al.* 2003; Madeira 2001; Marchenko 1985; Omar 1995; Peris 1987; Povolny 2002; Queiroz 1996; Queiroz et al. 1996, 1997; Rognes 2002; Trofimov 1969; Verves 2004; Zumpt 1965).

***Chrysomya megacephala*** (Fabricius 1794).

*Musca megacephala* Fabricius 1794: 317.

*Chrysomya megacephala*: Bezzi 1927: 235; James 1977: 542; Pont 1980: 789; Schumann 1986: 39; Verves 1986: 548; 2003: 4; 2005: 258; Zumpt 1962: 67.

*Somomyia pfefferi* Bigot 1877: 257.

**Material examined:** Seychelles: Silhouette Island, La Passe, 14.06.2004 (J. Gerlach), 1 male, 1 female.

Distribution: widely distributed in Madagascan, Afrotropical, Oriental, Australasian/Oceanian Regions and south Palaearctic; introduced in USA since 1988 (now known from Alabama, California, Florida, Georgia, New Mexico, Texas), and Latin America (Argentina – since 1980, Brazil - since 1970, Colombia – since 2002, Costa Rica – since 2001, Ecuador – since 1978; Mexico – since 1987, Honduras – since 1994, Nicaragua – since 1994, Paraguay – since 1983, Peru – since 2002, Puerto Rico – since 1995, Venezuela – since 1985). Seychelles: Mahe, Silhouette, La Digue, Bird, Aldabra.

**Bionomics:** Scavenger species, larvae essentially saprophagous, breeding in decomposing animal matter; occasionally a causative agent of cutaneous myiasis of different mammals & man; usual forensic indicators. Flies are distributed in native and secondary forests, synanthropic inhabitants and along sea coasts at elevations from sea level to 2000 m. Adults swarm on meat, feces, sweets, flowers; prefer eusynanthropic and hemisynanthropic habitats, rare in forests. This synanthropic species is among the most pestiferous filth flies known, and is likely to mechanically transmit enteric pathogens and parasites under unsanitary conditions. This species is important for forensic entomology (Catts & Goff 1992; Esser 1991; Goff & Odum 1987; Gomes et al. 2003; Greenberg 1971, 1973, 1988; Herman, 1990; James 1962; Kurahashi 1982, 1987; Kurahashi & Chowanadisai 2001; Martinez-Sanchez et al. 2000; Monzon et al. 1991; Olsen et al. 1993; Senior-White et al. 1940: 138; Wallman 1997; Wells 1991; Zuben et al. 2001; Zumpt, 1965).

#### SUBFAMILY RHINIINAE

##### ***Cosmina fuscipennis*** Robineau-Desvoidy 1830

*Cosmina fuscipennis* Robineau-Desvoidy 1830: 423; Deeming 1996: 267; Pont 1980: 780.

*Musca punctulata* Wiedemann 1819: 30 [Junior primary homonym of *Musca punctulata* Scopoli 1763].

*Cosmina punctulata*: Peris 1952: 131; Zumpt 1958: 76; 1962: 84.

*Cosmina cuprina* Bigot 1860: 539.

*Cosmina aethiopissa* Seguy 1958: 176.

**Material examined:** Seychelles: Aldabra Archipelago: Picard Island, 1974-1976 (R. Prys-Jones), 1 male, 7 females.

**Distribution:** MADAGASCAN REGION: Madagascar; Seychelles\*: Aldabra. AFROTROPICAL REGION: Botswana; Ghana; Guinea; Kenya; Mozambique; Oman; Tanzania; South Africa (Eastern Cape, Gauteng, Northern Cape, Western Cape).

**Bionomics:** unknown.

FAMILY SARCOPHAGIDAE

SUBFAMILY SARCOPHAGINAE

TRIBE SARCOPHAGINI

SUBTRIBE PHYTOSARCOPHAGINA

##### ***Ithosyia nomita*** (Zumpt, 1964)

*Sarcophaga nomita* Zumpt, 1964: 63.

*Sarcophaga (Curranea) nomita*: Reed, 1974: 193, 199.

*Sarcophaga (Ihosyia) nomita*: Pape, 1996: 337.

*Heteronychia (Afrohelicobia) nomita*: Dear, 1980: 808.

*Ihosyia nomita*: Lehrer, 2002: 46; 2003: 221; Verves, 1989: 35.

**Material examined**: Seychelles: Aldabra Archipelago: Picard Island, 1974-1976 (R. Prys-Jones), 3 males, 4 females.

**Distribution**: MADAGASCAN REGION: Madagascar; Seychelles\*: Aldabra.

**Bionomics**: unknown.

#### SUBTRIBE PHALLANTHINA

*Asceloctella* (s. str.) **malgache** (Zumpt, 1964) – **comb. nov.**

*Sarcophaga malgache* Zumpt, 1964: 59.

*Sarcophaga (Uroxanthisca) malgache*: Pape, 1996: 413.

*Helicobia (Uroxanthisca) malgache*: Reed, 1974: 209.

*Heteronychia (Uroxanthisca) malgache*: Dear, 1980: 809.

*Nesbittia malgache*: Lehrer, 2006: 22.

**Material examined**: Seychelles:: North Island, *Calophyllum inophyllum* woodland, 30.07.-1.08.2000 (J. Gerlach & J. Willi), 1 female; Silhouette, Grande Barbe, 06.2001 (J. Gerlach), 1 female.

**Distribution**: MADAGASCAN REGION: Madagascar (Fianarantsoa, Tamatave, Tananarive); Seychelles\*: Silhouette, North Island.

*Seselvana aldabrae* (Zumpt 1973).

*Sarcophaga aldabrae* Zumpt 1973: 3.

*Sarcophaga (Afrothyrsoecema) aldabrae*: Dear 1980: 811; Reed 1974: 200.

*Sarcophaga (Transvaalomysia) aldabrae*: Pape 1996: 412.

*Afrothyrsoecema aldabrae*: Verves 1986: 547.

*Transvaalomysia aldabrae*: Lehrer & Lehrer 1992: 328; Verves 2003.

***Seselvana aldabrae*: Lehrer 2003: 424.**

**Material examined**: Seychelles: Aldabra Archipelago: Picard Island, 1974-1976 (R. Prys-Jones), 1 male.

**Distribution**: MADAGASCAN REGION: Seychelles: Aldabra Arch. (Picard\*, South Island).

**Bionomics**: unknown.

#### SUBTRIBE PARASARCOPHAGINA

*Bercaea inaequalis* (Austen 1909).

*Sarcophaga inaequalis* Austen 1909: 99; Shinonaga, 2001: 215; Zumpt 1951b: 78; 1964: 69.

*Sarcophaga (Bercaea) inaequalis*: Dear, 1980: 811; Pape 1996: 304; Reed, 1974: 198; Zumpt 1972: 106.

*Bercaea inaequalis*: Lehrer, 2003: 81; 2006: 20; Rohdendorf, 1963: 11; Verves 1986: 547; 2003: 7.

**Material examined:** Seychelles: D'Arros, 21.06.2003, 1 female.

**Distribution:** widely distributed in Madagascan and Afrotropical regions; PALAEARCTIC REGION: [North] Yemen. Seychelles: La Digue, D'Arros\*, Farquhar.

**Bionomics:** bred from feces; adults attracted to excrements, corpses and other decomposed animal matters (Cuthbertson 1937).

***Liosarcophaga* (s. str.) *metallescens*** (Bezzi 1923), comb. nov.

*Sarcophaga metallescens* Bezzi 1923: 86.

*Sarcophaga* (*Liosarcophaga*) *metallescens*: Pape 1996: 355.

*Parasarcophaga* (*Liosarcophaga*) *voluptus* Verves 1986: 543.

*Liosarcophaga metallescens*: Lehrer, 2003: 280.

*Liosarcophaga* (s. str.) *metallescens*: Verves 2003: 9.

**Material examined:** Seychelles: Silhouette, Grande Barbe, 06.2001, 1 female.

**Distribution:** MADAGASCAN REGION: Seychelles (Mahe, Silhouette).

**Bionomics:** unknown.

***Liosarcophaga* (s. str.) *tibialis*** (Macquart 1851).

*Sarcophaga tibialis* Macquart 1851: 232 [205]; Abasa, 1972: 400; Shinonaga, 2001: 216; Zumpt 1951a: 179; 1964: 70.

*Sarcophaga* (*Curranea*) *tibialis*: Reed, 1974: 194, 199; Zumpt 1972: 111.

*Sarcophaga* (*Liosarcophaga*) *tibialis*: Pape 1996: 359.

*Parasarcophaga* (*Curranea*) *tibialis*: Verves 1986: 545.

*Curranea tibialis*: Lehrer, 2003: 152; 2006: 20.

*Liosarcophaga* (s. str.) *tibialis*: Verves 2003: 9.

*Sarcophaga albofasciata* Macquart 1851: 232 [205].

**Material examined:** Seychelles: Aride, 2002 (J. Gerlach), 2 females; Aldabra Archipelago: Picard Island, 1974-1976 (R. Prys-Jones), 2 males; D'Arros, 21.06.2003, 1 female.

**Distribution:** widely distributed in Madagascan and Afrotropical Regions, Eastern Palaearctic (Mediterranean area), Oriental (Chagos Is.) and Australasian/Oceanian (Society Is., Tuamotu, New Caledonia) Regions. Seychelles: Mahe, Silhouette, North, Aride, Aldabra Atoll (Picard Island)\*.

**Bionomics:** A thermophilic and heliophilic species tending towards culturophily and synanthropy. Larvae develop in carcasses of vertebrate and invertebrate animals; facultative parasites of locusts, some may participate in man and mammal myiasis; bred from eggs of loggerhead (Beaver 1986; Disney 1973; Greenberg 1971; Povolny & Verves 1997; Zumpt 1965, 1972).

#### SUBTRIBE BOETTCHERISCINA

***Boettcherisca peregrina*** (Robineau-Desvoidy, 1830).

*Sarcophaga peregrina* Robineau-Desvoidy 1830: 356; Zumpt 1964: 57, 61.

*Sarcophaga* (*Prionophalla*) *peregrina*: Reed, 1974: 193, 195.

*Sarcophaga* (*Boettcherisca*) *peregrina*: Pape 1996: 310.



*Boettcherisca peregrina*: Lehrer, 2003: 126; Rohdendorf, 1963: 10; Verves 1986: 547; 2003: 10.

*Sarcophaga meriani* Zumpt, 1951a: 182.

**Material examined:** Seychelles: Silhouette, La Passe, malaise trap in *Asystasia* sp. above Dauban mausoleum, 1-4.07.2000 (J. Gerlach & J. Willi), 2 females; Aride, 2002 (J. Gerlach), 1 male, 1 female; North Island, marsh edge, 1-21.08.2005 (E. O'Shea), 1 female.

**Distribution:** MADAGASCAN REGION: Mauritius; Reunion; Seychelles: Silhouette, Poivre, North\*. Widely distributed in Oriental and Australasian/Oceanian Regions, and eastern Palaearctic.

**Bionomics:** larvae bred from dead vertebrate and invertebrate (insects, snails) animals, garbage, animal dung and human feces; from living earthworms and locusts; facultative predator of lepidopteran pupae; produced cutaneous myiasis of men and mammals. Flies extensively distributed in the eusynanthropic as well as the semisynanthropic and asynanthropic zones; known as disease vector (Das & Dasgupta, 1986; Greenberg, 1971, 1973; Kano et al., 1967; Kurahashi & Kano 1984; Zumpt 1965).

## DISCUSSION

Despite of the relatively great number of publications about calliphorids and sarcophagids of Seychelles, the fauna of those flies is not studied completely. The occasional collections are not illustrated a real species composition. The modern influence of some synanthropic species in Seychelles (*Chrysomya albiceps*, *C. megacephala*, *Bercaea inaequalis*, *Liosarcophaga tibialis*, *Boettcherisca peregrina* and some others), which are vector diseases and myiasis producers, can be the potential danger of epidemics and of the development of tourism in Seychellie Republic in future.

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### ***Rhysida longipes longipes* (Newport, 1845) in the Chagos Islands, Indian Ocean (Chilopoda, Scolopendromorpha, Scolopendridae).**

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#### **INTRODUCTION**

In March 2006 three specimens of scolopendromorph centipede were collected on Eagle Island (243.5ha), the second largest island of the Chagos Archipelago by NCC. They were identified as *Rhysida longipes longipes* (Newport, 1845) by JGEL. This is the first centipede to have been recorded from the Chagos Archipelago and is here described.

#### ***Rhysida longipes longipes* (Newport, 1845)**

*Branchiostoma longipes* Newport, 1845 Trans. Linn. Soc. Lond., 19:411

*R. l. longipes*: Attems, 1930 Das Tierreich, 54:194.

#### **Description of Eagle Island material.**

Three specimens: specimen 1 body length 52mm, specimen 2.53mm, and specimen 3.27mm. Eagle Island, Chagos Archipelago, March 2006, under tarpaulin on the ground.

Colour of live specimens: antennae light orange, head and trunk reddish brown, last two segments brownish red, legs yellowish white with grey pigment beneath, ultimate legs orange. Colour after preservation in 99% ethanol for two months, Head and trunk dark violet, antennae dark blue, legs basally greyish yellow, distally greyish turquoise, ultimate legs blackish blue.

Antennomeres 18 (17 on one side in specimen 1), the basal four glabrous dorsally except for narrow anterior internal strip, the basal three glabrous ventrally. Antennae when reflexed reach about tergite 3.



Tergite paramedian sutures very fine, complete on tergite 4 in spms 1 & 2, but only on 6 and from 12 in spm 3 (possibly a juvenile character). Marginate from 8, 9 or 11, without spinules, ridges or corrugations.

Sternites with or without very short anterior paramedian sutures.

Ultimate leg coxopleuron long with two terminal and one subterminal spine, one lateral, no dorsal spine. Ultimate leg prefemur with three ventrolateral spines, two, three or four ventromedials, two or three dorsomedials and a corner spine.

Leg 1 with a femoral spur (only seen in specimen 1). Legs 1 to 3 with a tibial spur. Two tarsal spurs on legs 1 to 3 and 6 on right in spm 1, 1 to 7 in spm 2, 1 to 7 and leg 12 on right in specimen 3. The other legs to leg 19 with one tarsal spur, Legs 20 and 21 without.

The specimens have been deposited in the Natural History Museum, London.

### Possible origin

The specimens show the characters of typical *R. l. longipes* as given by Attems (1930) with the exception of the antennae which have the basal four antennomeres glabrous as opposed to the normal three. Kraepelin (1903), however, noted that material from Ceylon [Sri Lanka] had four glabrous basal antennomeres and was perhaps, a separate variety. Attems (1930) described this as *R. l. longipes* var. *sinhalana*, presumably based on this material, but as an infrasubspecific category this has no taxonomic status. The Chagos islands are extremely remote and access to them is restricted such that there are very few visitors. Nevertheless, fishermen from Sri Lanka are sometimes found camping illegally on the island fishing for sea cucumbers; it is therefore possible that they are a potential source of introduction. Historically there were trade routes with Mauritius and the Seychelles but the Mauritian population of *R. longipes longipes* differs in that only the basal three antennomeres are glabrous and the species has not been reported from the Seychelles.

### Biological notes

The species was found in damp areas underneath plant (mainly coconut) debris at ground level but also in damp and rotten coconut fronds still attached to the palms. When removing camp after a three month visit to Eagle Island to eradicate an introduced black rat (*Rattus rattus*) population, centipedes were discovered under almost all items that held moisture against the ground e.g. stored tarpaulins, tent groundsheets, logs for seating etc. Underneath one 2.5 x 2.5 m tent 11 individuals were found, two of which carried eggs, holding about 14 to 16 eggs in pairs on the underside of the body starting from about a third of the way down from the head. None of those seen were coiled around the eggs, which were held to the underside when the female was moving. Movement was slow but they did not have to move far (less than 1m) to find cover. A female with young was found at the base of a loosely attached palm frond 1.5m above ground level at the boundary between dense mangrove and palm swamp. She was coiled round them when first disturbed.

A "fully grown" individual predated another of equal size. Both were disturbed in palm litter one having the other by the head. The individual being held soon became

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still and the victor proceeded to consume the head before dragging its prey beneath palm debris.

Many hours were spent searching the island at night throughout the duration of the trip but contrary to expectations, no centipedes were seen to be surface active.

## Acknowledgements

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## **A short note on the nesting biology of green turtles (*Chelonia mydas*) on Cousine Island, Seychelles**

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## INTRODUCTION

The green turtle, *Chelonia mydas* (Linnaeus, 1766), is widely distributed throughout Seychelles, and the western Indian ocean (Frazier 1975). Hornell (1927) found it most commonly around the Aldabra group of islands. In the granitic islands, the green turtle was reported as abundant in the 1700s (Gerlach 1997), but by the 1980s their numbers had decreased significantly (Mortimer 2000), with estimates of between 10 (Mortimer 1984) and 30 (Frazier 1984) individuals nesting on these islands. Consequently, Gerlach (1997) has listed the green turtle as 'critically endangered' in Seychelles. This large decrease in the number of green turtles has been attributed mainly to its exploitation as food (Stoddart 1984).

Very little published information exists on the nesting biology of the green turtle in the granitic islands, especially on Cousine Island. Of the information that is

available, Frazier (1984) estimated the annual number of green turtle nesting on Cousine to be three, representing one female. Hitchins (2001), in an unpublished report on the green turtles of Cousine, lists six nests being laid between 1992 and 2001. In response this article will briefly focus on the following aspects of the nesting biology of the green turtle on Cousine Island: 1) Nesting ecology; 2) Nesting success, and; 3) Hatchling biometrics.

#### SITE AND METHODS

Cousine is a small granitic island situated 4° 20' 41" S and 55° 38' 44" E. It is just over 1km long, 400m at its widest point and 27ha in area (Bourquin 1997). The highest point on Cousine is approximately 70m a.m.s.l..

A 900m sandy beach lies on the NE facing shoreline of Cousine. Beach characteristics have been described by Hitchins, *et al.* (2003). A main feature of Cousine's beach is the massive erosion that it undergoes throughout the year. During the SE trade winds, sand from the eastern beach is removed and transported away, while there is an accumulation of sand and a widening of the northern beach. The process is reversed during the NW monsoon period. This results in large areas of the beach being eroded away at various times of the year.

Data were collected between May 2002 and April 2003. Methods follow those used by Hitchins, *et al.* (2004) for their study on the nesting success of the hawksbill turtle (*Eretmochelys imbricata* (Linnaeus, 1766)) on Cousine Island.

#### NESTING ECOLOGY

A total of five emergences were made during the study period resulting in the laying of five nests. All nests were laid at night. Table 1 lists the following. 1) The date each nest was laid. 2) The position of each nest on the beach. Here the beach was loosely divided into the northern beach, eastern beach, and midway between the northern and eastern beach. 3) The nest habitat. Nest habitat was divided into the dune crest base, which was sparsely shaded by vegetation, and the open unshaded beach.

*Number of adults* - Unfortunately no adult turtles were seen, but it is believed that two different females laid the five nests. Nest 1 was laid by one female turtle, and nests 2 to 5 by another. This assumption is based on an inter-seasonal nesting interval of two to three years, and a within-season inter-nesting interval of 12-15 days (Ehrhart 1995). By comparison, on nearby Aride Island, an estimated average of 6.5 green turtles per year have used the island for nesting over the last 15 years (Crowley 2000).

*Nesting phenology* - Although data are very limited, nesting by the green turtle on Cousine appears to be between July and February. Hitchins (2001) found that the six nests recorded from 1992 to 2001 were laid between July and December, with four being laid in August. In this study only one nest was laid in July and the rest from late December to early February. A similar situation was found on nearby Aride (1998/1999 season), with the first emergence for a green turtle recorded in early October 1998 and the last emergence in mid February 1999 (Crowley 2000).

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**Table 1.** The date each nest was laid, positions of each nest on the beach, and nest habitat of the five green turtle nests laid on Cousine Island between May 2002 and April 2003.

Nest #	Date	Nest position	Nest habitat
1	8-9 July 2002	Mid beach	Open unshaded beach
2	28-29 December 2002	East beach	Dune crest base, partially shaded
3	12 January 2003	Mid beach	Open unshaded beach
4	22-23 January 2003	Mid beach	Open unshaded beach
5	2-3 February 2003	Mid beach	Dune crest base, partially shaded

**Table 2.** Relocation of nests, clutch size, nesting success (%) and incubation period (# of days) of the five green turtle nests laid on Cousine Island between May 2002 and April 2003.

Nest #	Relocated	Clutch size	Nesting success (%)	Incubation period (days)
1	No	16	0.0	-
2	No	149	87.9	53
3	Yes	158	87.3	54
4	Yes	152	83.5	55
5	Yes	147	84.4	55
Mean	-	125	68.6	53.5

Although green turtles nest all year round on Aldabra (Gibson 1979), Seabrook (1989) found nesting activity to be concentrated between late November and April, which is again similar to Cousine. However, in other studies, the nesting activity on Aldabra was found to peak between February and July (Frazier 1971) and between May and September (Mortimer 1984).

*Nest position* - Four of the five nests were laid on Cousine's mid beach. Three of these four nests were relocated to prevent their destruction by an eroding beach (see nest success, and Table 2 below). This choice in nest position is in contrast with the hawksbill turtle, which preferred nesting on the north beach, even though all sections of the beach were used (Hitchins, *et al.* 2003). No green turtles were found nesting on the north beach during this study.

*Nest habitat* - Nest habitat is similar to that of other green turtles in that the nests are generally laid in unvegetated, unshaded beach sand, free of humus (Frazier 1984). However, two of the nests were laid at the base of the dune crest under the partial shade of over hanging vegetation. This choice in nest habitat is similar to that found on nearby Aride (Crowley 2000).

## NESTING SUCCESS

Nesting success of the five nests are summarised in Table 2. Table 2 lists the following. 1) Nest relocation (i.e. whether the nest was relocated or not). 2) Clutch size. 3) Nesting success. Defined here as the number of hatchling released to the sea expressed as a percentage of the number of eggs laid. 4) Incubation period. Defined here as the time the eggs were laid to the time hatchlings were first seen in the nest.



**Fig. 1.** Green turtle eggs from Nest 1, laid 9 July 2002, Cousine Island, Seychelles

*Clutch size* – Mean clutch size was 125 eggs ( $n = 5$ ). However, only 16 eggs were laid in nest 1. This nest was considered abnormal (see nesting success below). If nest 1 is removed from data analysis, the mean clutch size increases to 152.25 eggs ( $n = 4$ ). This figure is higher than that of other green turtle studies in Seychelles. Bourquin & Hitchins (1998) found the average clutch size for three nests on Cousine to be 116 eggs (ranging from 84 to 158 eggs). Crowley (2000) found the average clutch size of five Green turtle nests on nearby Aride to be 78.8 eggs (ranging from 56 to 132 eggs).

Although the data in this study are very limited, it appears as though the mean clutch size on Cousine is slightly higher than other green turtle populations outside Seychelles. For example; 138 eggs for Surinam (Schulz 1975); 116 eggs for Ascension (Carr & Hirth 1962); 122 eggs for Guyana (Pritchard 1969); 128 eggs for Florida (Ehrhart 1995); 110 eggs for Costa Rica (Carr & Hirth 1962); 160 eggs for Yemen (Hirth 1971), and; 105 eggs for Sarawak (Hendrickson 1958).

*Nesting success* - Mean nesting success was 68.6% ( $n = 5$ ). Three of the five nests were relocated due to beach erosion. This was the only reason a nest was relocated. All three of these relocated nests would have been totally destroyed by the eroding beach if they hadn't been moved to a more stable non-eroding beach. This would have resulted in the loss of 460 of the 625 eggs laid (i.e. 74% of all eggs laid), and an overall nesting success to only 24%.

Nest 1 was an abnormal nest, with only 16 eggs being laid. None of the eggs

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developed into hatchlings as all eggs appeared deformed (Fig 1). This nest consisted of the following eggs: three small oval eggs each 20mm in length; six large oval eggs each approximately 60mm in length; four double eggs each 100mm in length, and; three small eggs of a non-descript shape. If nest 1 is removed from data analysis, nesting success would be 85.7% ( $n = 4$ ).

Excluding nest 1, the mean nesting success for this study is 85.7% ( $n = 4$ ), varying from 83.2% to 87.9%. This figure is difficult to compare with other nesting sites, as it is not always clearly defined what is meant by nesting success in those studies. However, Frazier (1984) listed the nesting success for Maziwi as 78%, for Tromelin as 76.34%, and for Europa as 84.3%. He also states that the nesting success for Aldabra is similar to the above three places even though the data had not been analysed. Interestingly, Crowley (2000) recorded a mean nesting success for five Green turtle nests on nearby Aride to be 95.18% (ranging from 86.36-100%). However, nesting success was not defined here. In this study, the nesting success was higher than those listed by Frazier (1984), although lower than Crowley (2000). This high nesting success is attributed to the *in situ* conservation management of the nests. Clearly, through the careful management of the nesting sites, the total number of hatchlings reaching the sea can be easily increased. This is particularly important for a critically endangered species (Gerlach 1997), especially one whose numbers have been estimated as between 10 and 30 individuals in the granitic islands (Mortimer 1984; Frazier 1984).

*Incubation period* – The mean incubation period was 53.5 days ( $n = 4$ ), varying from 52 to 55 days. This is similar to that recorded by Frazier (1984) for Aldabra, which varied from 47 to 69 days.

## HATCHLING BIOMETRICS

*Hatchling biometrics* – Straight-line measurements of the carapace length and width were made from 82 randomly selected hatchlings from four nests. All measurements were made to the nearest 0.1mm using Mitutoyo callipers. Mean green turtle hatchling carapace length was 45.49mm ( $n=82$ ,  $SD=1.25$ mm, range 41.3-48.1mm), and mean green turtle hatchling carapace width was 33.65mm ( $n=82$ ,  $SD=1.62$ , range 29.2-36.7mm).

The carapace length of the green turtle hatchlings in this study are slightly smaller than that reported in previous Seychelles studies. In earlier unpublished data collected from Cousine, Bourquin (1997) found that green turtle hatchling carapace length varied from 45 to 52mm. Frazier (1971) reported an average carapace length of 50mm from Aldabra and Astove.

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## First record of the yellow-bellied sea snake (*Pelamis platurus*) from Cousine Island, Seychelles

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Cousine Island is a small granitic island situated 4° 20' 41" S and 55° 38' 44" E. It is just over 1km long, 400m at its widest point and 27ha in area (Bourquin 1997). On the morning of the 3 September 2002, a yellow-bellied sea snake (*Pelamis platurus*) (Elapidae) (Fig 1) was found washed ashore on Cousine Islands beach. The specimen weighed 190g and was 720mm long. The yellow-bellied sea snake is very rarely encountered in Seychelles waters, and the first confirmed records of this highly venomous species in Seychelles were of two found washed ashore on Mahe in 1999, and a third seen swimming off Poivre Island (Gerlach 2006).

Nussbaum (1984) lists three snake species occurring in Seychelles: 1) The Seychelles house snake (*Boaedon geometricus*); 2) The Seychelles wolf snake (*Lycognathophis seychellensis*), and; 3) The Brahmin blind snake (*Ramphotyphlops braminus*). Bourquin & Hitchins (1998) only record the Seychelles wolf snake and Brahmin blind snake from Cousine Island. As Gerlach (2006) states, the scarcity of records of the yellow-bellied sea snake in Seychelles waters indicate that the few encountered are probably stragglers from the more substantial populations in the eastern Indian Ocean and the Pacific.

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**Fig. 1.** Yellow-bellied sea snake (*Pelamis platurus*) (3 September 2002)

